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THE

Compleat Chymiſt,

OR, A

NEW TREATISE OF Chymiſtry.

Teaching

By a ſhort and eaſy method all its moſt neceſſary Preparations.

Written in *French* by *Chriſtopher Glaſer*, Apothecary in Ordinary to the *French King*, and the *Duke* of *Orleans*. And from the fourth Edition Reviſed and Augmented by the Author. *Now* faithfully *Engliſhed* by a *Fellow* of the *Royal Society*.

Illuſtrated with Copper Plates.

LONDON,
Printed for *John Starkey* at the Miter in *Fleet-ſtreet*, near *Temple-Bar*. 1677.

82.

Licenſed,

Feb. 15. 1677. *Roger L'Eſtrange.*

982:11

The Authors Preface.

AUthors who have treated of Chymiſtry have had very different diſcoveries and Apprehenſions, and thence it is that they have diſagreed very much in their Writings. Theſe who have applied themſelves unto the high Chymiſtry, and have penetrated into its greateſt myſteries, have contented themſelves with the knowledg thereof; and though it may ſeem that they Wrote with an intent to be underſtood, yet they have penned things ſo obſcurely, that they gave us no grounds to queſtion whether they uttered realties, or have given us Fantoms for Bodies, and Thorns for Fruits: Others who have not ſoared ſo high, have notwithſtanding had ſome good skill therein, and have themſelves diſcovered ſome preparations, which have made them conſiderable to Poſterity; but ſome of theſe have ſought their own ſatisfaction alſo, and taken pleaſure to perplex mens minds, and to caſt them into Labyrinths, without giving them any means of retreating thence.

Others much leſs capable, have yet attained ſome ſmall light, but not knowing all, nor having wrought themſelves what they write, and deſiring for all that, to paſs for ſufficient Artiſts in a Profeſſion they had learnt by halves only, they made their Imaginations paſs for certain Truths, whoſe falſhood and imperfection the Practiſe hath frequently diſcovered.

Finally. *Others, which deſerve not the name of Chymiſts, but rather of ignorant Blowfires, working by copied or ſtolen Receipts, which they commonly take in ſome contrary ſenſe, and having conſumed their own, or others mony in a ridiculous Labour, have made many others accompany them in their fortunes, engaging the vulgar by promiſes of enriching them in certain practiſes, whereby they have reduced the beſt Metal into Smoak, unleſs perhaps they paſt ſome part of it through their own hand, which is not the leaſt of their Operations. Hence it is that I wonder not, that many have*

declamed againſt ſuch Authors, and againſt Chymiſtry it ſelf; having not underſtood truly the good things which it contains. As for my ſelf, who profeſs to ſay nothing but what I know, and to write nothing but what I have done, I purpoſe only in this little Treatiſe, *to publiſh a ſhort and eaſy method for the happy attainment of all the moſt neceſſary preparations of Chymiſtry. Thoſe who take the pains to read and well conſider it, ſhall obſerve therein nothing tedious, ſuperfluous, or defective in any point which ought to be known: and thongh indeed the Preparations of all things cannot be found therein, yet ſufficient examples thereof will be had from it. And though it was very difficult to compriſe in this little* Tract, *all the diſcoveries which I have made in this Profeſſion, yet I have not concealed any manual Operation; and have ſincerely diſcovered all the circumſtances neceſſary to make a good Artiſt, and by practice to attain the greateſt knowledg thereof. I ſet down no Preparation but what I have made and well experienced, and what any one following the Rules I have preſcribed, may do after me. I ſpeak very ſuccinctly of the* Theory, *but I ſay ſo much therein as is neceſſary for direction to the preparations, and you may find in a few words the ſubſtance of many great Books.*

I confine my ſelf to Operation on Minerals, Vegitables, *and* Animals, *and proceed therein orderly, and forget nothing that is neceſſary. I am perſwaded that the experience of all that which I have advanced, will manifeſt my communicative freeneſs unto all, and that they will be well pleaſed with the care that I have taken therein. Unto which I have thought my ſelf ſo much the more obliged by the choice which Monſieur* Vallot, *his Majeſties chief and moſt worthy* Phyſician, *hath made of me, to make the publick Chmical Lectures and* Preparations *in the Royal Garden. For this cauſe I have deſired to manifeſt as well by writing as work, that I have no other deſign than to acknowledg the honour he hath done me, by giving ſatisfaction to the publick, according to his inclination, by all ways which are poſſible for me.*

Chriſtopher Glazer.

The *French* Printer to the

READER.

THE favourable reception which this Book met with from the Publick in its former Editions has made me undertake this fourth, in which I have endeavoured to purſue as much as poſſible the Author's deſign; who the firſt time he publiſhed it, was moved ſo to do, only by the deſire of being uſeful to thoſe who delight in *Chymiſtry*; by diſcovering to them many hidden Myſteries which he made plain and open by the eaſineſs of his Method. The ſecond Edition was not only enriched by ſome Cuts, and encreaſed by ſome new Experiments, but it was likewiſe adorned with an *Epiſtle Dedicatory* to to Monſieur *Vallot*, his moſt Chriſtian Majeſties firſt Phyſician, a perſon to whom Chymiſtry was not a little beholding, if it were but for having choſen our Author to teach it in the Royal Phyſick Garden at *Paris*, where he conſtantly

ſtantly performed publick Lectures of it. The method he follows is clear and eaſily practicable; comprehending in few words the ſubſtance of great Volumes. Whoſoever reads it attentively, may obſerve that there are no ſuperfluous Cantings, nor any thing omitted of what is neceſſary to be known, and though one does not find here the preparation of all things in particular; yet there are Examples of every thing by which one may prepare others of the like kind, this one way be ſure of, tha the does not communicate any one Operation but he has firſt put it in practice; and ſo as by following exactly his Rules, any body may perform it after him: For far from concealing any ſlight of hand, or other myſtery, he does what he can to diſcover all thoſe means by which a good Artiſt is made, and all circumſtances of Operations which may give light to ingenuous perſons of attaining a greater skill. He ſpeaks but ſparingly of the Theory of this Art, and yet he delivers ſo much of it as is neceſſary to know in the Operations upon *Minerals*, *Vegitables*, and *Animals*.

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THE

THE Compleat Chymiſt; OR, A TREATISE OF CHYMISTRY.

The *FIRST BOOK.*

CHAP. I.

Of the different names, and definition of the Art of Chymiſtry.

MY Deſign in this Treatiſe is to inſtruct the Publick in all the particulars of the Art of Chymiſtry, as well in its Practice as in its Theory; and that by the ſhorteſt and moſt intelligible method of any that has been yet ſeen:

and we will begin by the different names which have been given it, as well by the Ancients, as by modern Writers.

The Etymology, or derivation of the word *Chymiſtry*, comes from the *Greek* Verb χέειν, which ſignifies to melt; or if you pleaſe, you may derive it from χυμὸς, which is a juice, becauſe it does as it were draw the interior juice of all bodies: it is called likewiſe the *Spagyrick* Art, from two *Greek* words, σπᾶν, which ſignifies, to ſeparate; and ἀγείρειν, which is, to congregate, or unite; which are the two Operations about which it is moſt particularly employed. Some call it *Pyrotechnia*, from πῦρ, Fire, and τέχνη, an Art, being an Art whoſe Operations are moſt performed by Fire: Finally, ſome others name it the *Hermetick* Art, becauſe of *Hermes* a great Philoſopher, who was the moſt Ancient and Famous Profeſſor of this Art. The particle *al* is added to it, and it is called *Alchymia*, in imitation of the *Arabs*, who uſe it in the beginning of words, to expreſs the excellency or ſupereminency of a thing; but for us, leaving all its other names, we ſhall ſtick to that of Chymiſtry, as being now the moſt in uſe; and though Authors have beſtowed many definitions upon it, yet thoſe have beſt known its nature who have defin'd it. A *Scientifick* Art, by which one learns to diſſolve bodies, and draw from them the different ſubſtances of their compoſition, and how to unite them again, and exalt them to an higher perfection.

CHAP.

CHAP. II.

Of the Uſefulneſs of Chymiſtry.

THey that have any true knowledg of this Noble Art, are without doubt fully perſwaded of the uſefulneſs of it; for it is the key which alone can unlock to all Naturaliſts the door of Nature's ſecrets; by reducing things to their firſt principles; by giving of them new forms; and by imitating Nature in all its productions and Phyſical alterations. Without it Phyſitians would be at a ſtand how to penetrate into the many Fermentations, Effervescencies, Diſtillations, and other Operations, which are performed in the body of man, and are the immediate cauſe of many grievous Diſtempers; to which Art the ſame Phyſitians muſt be beholding for the Remedy as well as the Knowledg of the Diſeaſe; for we muſt own that Chymiſtry does furniſh us with the more effectual Medicines for the more inveterate and obſtinate Affections, and often ſupply the failings and deficiencies of thoſe of the vulgar *Pharmacy*. Chirurgeons likewiſe cannot be without Chymiſtry, nor can with good ſucceſs undertake the Cure of all Diſeaſes pertaining to their Art without Chymical Reme-

dies, and knowledg of their Operations: And it is impoſſible that *Apothecaries* ſhould make their compoſitions like true Artiſts, if they know not how to preſerve the principal vertue of their Ingredients, and ſeparate the pure from the impure, and heterogeneous in natural commixtures, as unprofitable to their intention, which is not learned without the aid of this noble and excellent Art. Finally, moſt of the ingenious mechanick Arts are beholding to this: Painters have from it their moſt lively and glorious Colours: Engravers cannot work without the aſſiſtance of thoſe corroſive Spirits prepared by Chymiſtry: Diers cannot exalt their Colours without the inſtruction of Chymiſts: One might alledg an infinity of other ſuch Examples, which might prove the neceſſity of this Art; but we omit them for brevity ſake.

CHAP. III.

Of the Subject-matter of Chymiſtry, and its Functions.

THis Art is of a very great extent, ſince it embraces for its Subject the bodies of the three Families, Animal, Vegetable, and Mineral; which by fire it reduces into different ſub-

ſubſtances, which the Philoſophers call *Firſt Principles*, and do conſtitute five of them, of which three are Active, and two Paſſive. The Active are, the Spirit which is called *Mercury*, the Oil which is called *Sulphur*, and the *Salt*, which has no other name. The Paſſive Principles are the *Water* or *Flegm*, and the *Earth* or Terreſtrial part: Theſe names are beſtowed upon them for the likeneſs they have to common *Mercury*, *Sulphur* and *Salt*, and the Elementary water and earth: the *Mercury* appears to us in the reſolution of bodies, in form of a moſt aerial ſubtil liquor; the *Sulphur* is apparent to our ſmell and taſt, by which we diſtinguiſh it from the inſipid and inodorous Flegm, which ſometimes aſcends with it; and it appears to us in the form of a penetrating inflamable Oil; the *Salt* remains joyn'd to the body of the earth till it be extracted by elevation. Now while theſe Principles remain in the body of the mixt, thoſe that are Active are confounded with the Paſſive, ſo that their vertue is hidden, and as it were, buried; but Chymiſtry coming to ſeparate them, purifies each by it ſelf, then unites them again, to make of them bodies much purer, and more Active than they were before. We will now treat of each of theſe Principles in particular.

CHAP. IV.

Of the three Active Principles, Mercury, Sulphur, *and* Salt.

TO begin with *Mercury*, or the Spirit, which, as the moſt excellent of the three, does in the reſolving of bodies, firſt preſent it ſelf to our ſenſes; we ſhall ſay that it is a ſubtil, light, and penetrating ſubſtance, which gives life and motion to bodies, makes them grow and vegetate; and becauſe it is a continual action and motion, it would not long ſtay in any body, if it were not retained by the other Principles more fix and ſtable than it ſelf: And from hence it follows, that thoſe Mixts in which this ſubſtance predominates, are not very durable; as we may obſerve in Animals and Vegetables, which periſh much ſooner than Minerals and Metals, which are almoſt deſtitute of this Principle.

Sulphur is the ſecond Active Principle, but much inferior to the Spirit; its ſubſtance is oleaginous, ſubtil, penetrating, and inflamable; it is eaſily reduced into a pure Principle as well as the others. When it contains ſome ſpirituous and aery Particles, it ſwims upon the water, as the *Aromatick* ſubtil Oils of Roſemary,

mary, Sage, Turpentine, and others; and if it contain ſome part of Salt and Earth, then it is a thick and heavy Oil, which ſometimes ſwims in the middle of the Flegm, ſometimes goes to the bottom; as we obſerve in the Oils of *Gums*. *Bitumens*, and *Groſs Woods*, *&c.* which are diſtilled with violent fire: 'Tis this Principle which is ſaid to cauſe Beauty or Deformity in Animals, of the different ſmells and colours in Vegetables, and of the ductibility and malleability of Metals. It binds together all the other Principles, which without him would fall a-ſunder, by reaſon of their little correſpondence and contrarieties; it preſerves bodies from corruption, ſweetens the *acrimony* of Salts and Spirits; and being of a fiery nature, it preſerves thoſe Vegetables where it abounds, from the rigour of cold and froſts, and other injuries of the weather; as we may obſerve in *Cyprus* and *Fir-trees*, and others that are green all Winter.

The third Active Principle is *Salt*, which appears to us after that the volatile parts are evaporated and exhal'd, becauſe it remaineth its ſelf fix'd with the earth, from which it is ſeparated by diſſolution and evaporation; then it offers its ſelf to our view in the form of a brittle ſubſtance eaſily pulveriz'd; and that demonſtrates its drineſs, which appears likewiſe by its deſire of moiſture, which it attracts from the Air ſo powerfully, that in a ſmall time it becomes fluid. The way of purifying the *Salt* is by fire, and it is incombuſtible: its office in

the Mixt is to retain the Spirit, and preſerve the *Sulphur* from combuſtion, and is as it were their common Baſis or Foundation; it is the cauſe of the different taſts of things, and renders thoſe bodies where it abounds, ſo durable, that they are almoſt incorruptible: As for Example; the Oke, which has in it much Salt, and little Oil, is of a laſting ſubſiſtence, and ſo are many other Mixts of the ſame nature.

CHAP. V.

Of the Paſſive Principles; the Flegm *and* Earth.

WE muſt now ſpeak of the Paſſive Principles, of which the *Water* or *Flegm* is the firſt; and though it ſeem to be of little or no uſe in bodies, nay, and is hurtful, being the ſubſtances where it abounds, are eaſily corrupted; nevertheleſs it has its utility. 'Tis by it that the Salt is diſſolved and incorporated with the Spirit and *Sulphur*, in which union the Salt would hinder, by its binding too much, their action and vegetative motion, if it were not allaid by the water, which likewiſe corrects the *acrimony* of the Salt and Spirit, and hinders the inflammability of the Oil.

The

The *Earth* is the laſt of all our Principles; and though it be eſteemed of little benefit in natural mixture, it is not unneceſſary, ſince it retains the Salt, and the other Active Principles, which would elſe be eaſily diſſolved, and carried away by the water. When it is entirely deſtitute of all the other Principles, it is called *Terra damnata*, or *damned Earth*: The uſe of it in Chymiſtry, is, only to hinder the Salts from being too eaſily melted down; and ſo we forbear to treat any further of it.

CHAP. VI.

Of all thoſe different Operations which are uſed in the opening and reducing of mixt bodies to their firſt Principles.

THE mixt bodies of the three Families of *Vegetable*, *Animal*, and *Mineral*, are in infinite numbers, and do differ much in hardneſs, ſolidity, weight, ſoftneſs, poroſity and lightneſs; and this has obliged Artiſts to ſeek out all ways to attain their ends, and by conſequent to uſe great variety of neceſſary Operations, upon which they have beſtowed as great a diverſity of terms of Art, whereof ſome carry their ſignification with them, and others are

to

to be explained to young Chymiſts, which we ſhall do by an Alphabetical order.

To *Alkoolize*, is to reduce ſolid ſubſtances into a very fine impalpable powder; and it is likewiſe to purify and refine all Spirits and Eſſences of their Flegm, and other impurities; whence the Spirit of Wine well rectified, is called the *Alkool* of Wine.

To *Amalgame*, is to calcine any Metal by the means of ordinary *Mercury* or *Quickſilver*; and this Operation ſerves to reduce the moſt perfect Metals into very ſmall particles; for when they are incorporated together, the Artiſts by a gentle fire cauſes the *Mercury* to exhale, and leave the Metal reduc'd into Powder in the bottom of the Crucible; and ſo prepares it to be more eaſily diſſolved by any other *Menſtruum*: this Operation is much uſed by *Goldſmiths* and *Guilders*, who by this means make Gold fluid, and eaſily extended upon thoſe things they intend to guild. Obſerve that Iron and Copper cannot be *Amalgam'd* by *Mercury*; theſe two Metals being very impure and terreſtrious, and of little ſympathy with *Mercury*, who is of a ſubtil refin'd ſubſtance.

To *Calcine*, is to reduce into a *Calx* or Powder, either by Actual, or by Potential fire. Actual fire is that elementary fire which we keep and entertain by combuſtible ſubſtances, as Wood, Coals, *&c.* Potential fire is the fire of *Aqua-fortis*, and other corroſive Spirits; Calcination belongs more to Minerals, than Vegetables

getables and Animals, which may be cinderiz'd by ordinary burning; but Minerals and Metals require moſt active and violent fires.

Cimentation is to purifie and examine Gold, which one reduces into thin Plates, and puts into a Crucible with a royal Ciment, which conſumes and reduces to droſs or cinders all the other Metals that are mingled with Gold.

Liquors are circulated in veſſels for that purpoſe, and upon a convenient fire, ſometimes in order to the fixing of the volatile Spirits, ſometimes to volatilize the fix'd Salts; 'tis one of the moſt important Operations of Chymiſtry.

To *Coagulate*, is to make thoſe things hard and ſolid which before were ſoft and liquid; which is done by depriving them of their moiſture, or conſuming it; as in the evaporation of thoſe liquors which contain ſome Salt in them; or in mingling corroſive Spirits with fixed Salts: as for example, the water of Flint, or Cryſtal mingled with *Aqua-fortis*, is coagulated into an hard maſs, though both theſe were liquid before.

Cohobation, is diſtilling the ſame thing very often, by putting the diſtilled liquor upon the matter which remains in the bottom of the Still, and ſo drawing it off: it is done either to open better the ſubſtances, and volatilize them; or to fix the Spirits; and accordiug to the quality of the matter, and the Artiſt's intention, this Operation is more or leſs reiterated.

To

To *Congele*, is to ſuffer thoſe Bodies to grow hard by cold, which fire before had melted and liquefied: This Operation is practiſed upon Metals, Minerals and Salts, which are purified by the violence of a melting fire, and when they are expoſed to the air, grow hard. The ſame is obſerved in the fat of Animals, and in the gums, rozins, and balms of Vegetables, which being melted by the fire, and their groſſer parts thereby ſeparated, are again congealed, by being expoſed to the cold air.

To *Corporize* is to incorporate Spirits, which is often practiſed in *Acids*, which are mingled with fix'd Salts, or with dry Earths: As for example, when one puts the Spirit of *Nitre* or of *Aqua-fortis* with the fix'd Salt of *Tartar*, the laſt retains the firſt ſo ſtrongly, that of them both one may make a good ſort of *Saltpeter*; and likewiſe when one puts very ſtrong Vinegar, or ſome other acid Spirit upon Coral or Pearls, they preſently retain all the acidity which the liquor contained, and it is fix'd with them.

To *Cryſtallize*, is to reduce into Cryſtals, *Nitre*, *Salts*, *Vitriols*, and others, which were firſt diſſolved, filtred, depurated, and evaporated, till a skin appeared upon the liquor; then they are expoſed to the cold air, where the Salts congeal by little and little, and by retaining ſome part of the water with which they had been diſſolved, they appear diaphanous, and cryſtalline; which tranſparency they loſe upon the leaſt heat of the Sun, who depriving

priving them of their water, makes them opake again.

Detounation, or *Fulminating*, is the driving out of a Mineral its impure and volatile *Sulphur*, and preſerving its intern and fix'd *Sulphur*: this Operation is performed by the means of *Saltpeter*, in preparing *Antimony* and other ſuch bodies.

To *Digeſt*, is to concoct things by a moderate heat; like that of our ſtomachs, which concocts raw things, ripens and ſweetens ſour and auſtere ones, ſeparates the pure parts from the impure, and extracts the beſt and moſt juicy parts of each ſubſtance. This Chymical Digeſtion is ordinarily perform'd by ſome liquor or *menſtruum* fit for the matter digeſtible; it differs from maceration only, becauſe there is requir'd heat in one, which is not in the other.

To *Diſſolve*, is to reduce hard and compact bodies, by means of ſome diſſolvents, into a liquid form, as we ſee in the diſſolving of Gold by *Aqua-regis*, and of Silver and others by *Aqua-fortis*.

To *Edulcorate* or *Sweeten*, is to take away by often lotions, and reiterated effuſions of ſome liquor, the impreſſion made by Salts and Spirits in Chymical Preparations, as in Precipitated Magiſteries and others.

To *Extinguiſh*, or *Quench*, is to dip or ſteep a ſubſtance made red-hot by fire, in ſome water; it is particularly practicable in Metals and Minerals; either to make them brittle, as in the

the extinction of pibbles in water, or to imprint into them ſome vertue of thoſe liquors in which they are extinguiſhed, as in the extinction of *Tutie* in Roſe or Fennel-water; or ſometimes to communicate vertue to the water, as in the extinction of Steel.

To *Evaporate* and to *Exhale* differ from one another in this, that dry bodies are exhal'd, and moiſt ones evaporated; as for example, when we *Amalgam* any Metallick body, we exhale the *Mercury* by fire, and the Metal remains calcin'd in the bottom of the Crucible. But Evaporations are done, as when for example, we drive away the ſuperfluous humidity of Salts and Extracts; purified by their diſſolutions and filtrations, to reduce them into a conſiſtence neceſſary for their preſervation.

To *Extract*, is to ſeparate in Animals and Vegetables the pureſt parts from the moſt groſs, by fit *menſtruums* that are proper for the extracting of thoſe ſubſtances which the Artiſt deſires: as for example, we extract the rozinous ſubſtance of *Jalap* by Spirit of Wine, becauſe that the rozin is the ſulphureous part of the *Jalap*; and that Spirit of Wine does likewiſe contain a ſubtil *Sulphur*, which eaſily unites with the other. So in all Extractions the Artiſt muſt have a regard to find out a *menſtruum* fitted to the ſubſtances he deſires to extract.

To *Ferment*, is to reduce the *volatile* and ſpirituous parts of Mixts from reſt into motion; or, as the Philoſophers ſay, *a potentia*

in

in actum, from power to act, by diſengaging them from the clog of the more groſs and terreſtrial parts, as is ſeen in all fermented liquors, and particularly in Wine, which having been fermented, eaſily yields its ſpirit inflamable by the leaſt heat of fire; whereas the Muſt quite contrary retains all the ſpirituous and ſubtil ſulphureous parts; and being reduced into the conſiſtence of Honey, which they call *Sape*, *Rob*, or *Quiddany*, without loſs of any ſubſtance, ſave inſipid water, or flegm; its active and volatile parts are ſo well faſtned and retained by the fix'd Salts, that they ſeldom fly away but by the violence of fire, or the action of fermentation: it has much of the nature of digeſtion, except that digeſtion, I mean Chymical, is made by an external heat, and fermentation is by its own power and an effect of the intrinſick fire of Mixts.

To *Filtrate*, is to let any thing ſtrain through another body; it is performed moſt conveniently thorow grey Cap-paper into a glaſs-tunnel.

To *Fix*, is to ſtay and retain ſome body which of its ſelf is volatile, ſo as to make it reſiſt the fire: this Operation is performed by the means of fix'd bodies. The experience may be made in *Sal-armoniack*, which, though extremely volatile, yet being mingled with quick-lime, is ſo fix'd, that the greateſt part of it endures the violence of the fire, which alone it would not have done.

To

To *Fumigate*, is to make any Mixt receive as it hangs in the air, the vapours of one or many other Mixts; to calcine it, or to correct ſome of its ill qualities, or impregnate it with ſome good one; as for example, we hang plates of lead over *Mercury*, which we cauſe to exhale in a Crucible upon the fire, in order to the calcining of them. We cauſe the ſmoke or vapour of *Sulphur* to be received by *ſcammony* ſhread upon a ſheet of paper, thereby to hinder its activity: we give likewiſe to well-waſh'd moſs the ſmoke of ſome ſpices, thereby to perfume it.

Fuſion, vide *Melt*.

To *Granulate*, is to pour out ſome molten Metal into cold water, to make it congeal to ſmall grains or pellets, to make it by that diviſion more fit for diſſolution.

To *Levigate*, is to bring a Mixt into an impalpable powder upon the Porphiry-ſtone, or Jaſpar; and it is performed upon the moſt ſolid Mixts, particularly upon Minerals.

To *Liquify*, is proper to all fat and greaſe of Animals, as likewiſe to wax, and all gums, and rozins, which is done by an eaſy heat, and they recover their conſiſtency in the cold.

To *Melt*, does belong only to Metals and Minerals, and is an Operation by which they are made running by the heat of fire; which we give ſtrong or moderate, according to the nature of the Metal or Mineral we are about to melt.

To *Mortify*, is to deſtroy the exterior form of

of the Mixt, which is done to *Mercury*; when you take away from him his fluidity and motion; the mixture of Salts and Spirits is likewiſe ſome mortification to them; for the one corrects the *acrimony* of the other.

To *Precipitate*, is to ſeparate a diſſolv'd Mixt from its *diſſolvant*, and make it fall in powder to the bottom. It is performed by the means of the Salts, which being put upon the diſſolution, deſtroy the force and power of the *diſſolvant*, and force him to forſake his hold of the Mixt, which he had already diſſolved: as may be obſerved in the precipitation of Coral and others.

To *Putrifie* Bodies, is to diſſolve them by a natural corruption, where moiſture predominates over dryneſs.

We raſp, ſaw, and file the more ſolid mixt Bodies, Vegetable, Animal, and Mineral, the better to open them, or to facilitate their diſſolution or preparation: theſe Operations need no farther explication.

To *Rectify*, is to diſtill the Spirits of any thing over again, to make them more ſubtil, and heighten their vertues.

To *Reduce*, is to give to the *Calx* of Metals their metallick form again; and this is done by the power of fire, and the help of ſome reductive Salts, as *Nitre*, *Tartar*, *Borax*, and others.

To *Reverberate*, is to bring a Body into a *Calx*, by the means of a violent fire environing the matter on all ſides. This Operation may be performed either in an open, or in a cloſe

fire; which is ſo called when there is a *cupola*, or *domo*, round or flat roof or cover upon the Furnace. This ſame cloſe fire of *Reverberation* is likewiſe in uſe, to drive up the Spirits and the Oils by a Retort; it is called a fire of *Reverberation*, becauſe the heat of the fire doth reverberate, and from all ſides reflect and act upon the matter, or the veſſel containing it.

To *Revive*, is oppoſite to the term of mortifying; ſince by this Operation, *Mercury*, which has been reduced into *Sublimate*, *Cinnaber*, *Precipitate*, and other ſuch *Foraces*, is brought into a *Quicksilver* again, as it ſhall be ſhewed in its due place.

To *Spiritualize*, is to reduce compact Bodies into thinner and more ſubtil ones, ſuch as Spirits are, as is practiſed upon Salts, which by diſtilation may be entirely forc'd into Spirits, and the ſame Spirits ſhall not take body again without the addition of ſome ſubſtance fit to retain them.

Stratifying, is laying *ſtratum ſuper ſtratum*, courſe upon courſe, and belongs to the Operation called *Cimentation*, where you lay a portion of a Powder or ſome other Corroſive matter in the bottom of a Crucible or Calcining Veſſel, and upon that ſome portion of the matter which one intends to calcine; ſo again upon that a new lay of Powder, and over that a lay of Matter, ſo continuing till your Veſſel be full, and finiſhing with a lay of Corroſive Powder, as one began.

To

To *Sublime*, is to force a dry Body to riſe, and exhale, and ſtay in dry parts in the top of the Veſſel, and this by the means of a well-govern'd fire. By this Operation ſome Bodies are perfectly ſublim'd, as *Mercury* and *Brimſtone*; others imperfectly, as *Antimony* in Flowers, *Benjamin*, and others.

To *Vitrify*, is to reduce Stones, Metals, Minerals, and others, into a tranſparent Maſs, hard as Glaſs, by a moſt violent fire, as may be ſeen in the Vitrification of *Antimony*, *Lead*, and many others.

To *Waſh*, is to take away the groſſer impurities of ſome mixt Body with water: we waſh Minerals alſo to ſeparate, and cauſe to riſe their thinner and finer parts, and to leave the more groſs and earthy in the bottom; as for example, in the preparation of *Litharge*.

CHAP. VII.

Of the variety of Veſſels which ſerve for Chymical Operations.

TO perform Chymical Operations, one muſt be very well provided with neceſſary Inſtruments and Veſſels; for there being but few things that can be prepared in an open naked fire, one is obliged to put ones matter into

ſome convenient Veſſel, which is to be placed with dexterity upon the fire, and that is to be governed differently, according to the Artiſt's skill and intention.

Theſe Veſſels are to be conſidered either according to their matter, or their form: their matter is to be of ſome pure, cloſe ſubſtance, not eaſily penetrable, and which likewiſe may not communicate its qualities to the Medicine prepared; ſuch as are particularly Potters-Earth and Stone, Braſs and Tin may ſometimes ſerve in diſtillations and preparations of Vegetables. But it is neceſſary to tin all Braſs and Copper-Veſſels, that they may not ſo eaſily communicate their *Vitriolick* quality hurtful to Medicaments.

The ſhape and form of Chymical Veſſels is almoſt infinite, therefore we will ſpeak only of thoſe which are neceſſary in a Chymical Laboratory, leaving every man to his liberty to invent thoſe which he judges proper to his deſign. Firſt, Gourds or Bodies either of Glaſs or Earth, with their Heads or *Alembicks*, which are placed in the *Balneum Mariæ* either of Sand or Aſhes, for all diſtillations *per aſcenſum*, by aſcent; then we make uſe of the *Veſica*, or Braſs Body or Gourd, with its Head or Refrigeratory tinn'd within, and fill'd on the top with cold water, which one muſt often change during the Diſtillation; likewiſe the other Braſs *Veſica* or Body, with the *Moreshead*, and a Pipe paſſing through an Hogſhead of water, is very uſeful in the diſtilling of ſuch

Aroma-

Aromatick Oils of Vegetables as are heavy, ſuch as are the Oils of *Cinnamon*, *Roſe*, *Wood*, *Cloves*, and others of that nature, which fall down to the bottom of the water, and do aſcend with difficulty in an high *Refrigeratory*.

To diſtill ſuch herbs as not being *Aromatick*, have their vertue conſiſting in their kind; *Salt*, a *Cucurbite* Gourd or Body, large, low, and capacious, is beſt; it may be of Braſs, but its *Lembick* or Head muſt be of Pewter; and this muſt be placed in the Sand Furnace repreſented here in the third Table.

Retorts are uſed in all Diſtillations that are made on the ſide, or ſidelong, *per lacus*. Artiſts have invented this Veſſel for ſuch matters as in diſtilling do not eaſily ſend their vapours upwards.

As for that Operation which is called Diſtilling by deſcent, we have Earthen-Pots that enter into one another; the lowermoſt muſt be ſet in the ground up to the very mouth, and the upper muſt have in its neck a *partition* full of holes, to hinder the matter contained in it from falling into the lower: this way of Diſtilling does particularly ſute with all ſorts of groſs Woods, they are to be chopt, and put into the uppermoſt Veſſel which is to be placed with its neck downwards upon the lowermoſt Veſſel, which muſt have, as has been ſaid, a partition full of little holes in its neck, & the mouth of it muſt go into that of the inferior; this done, they muſt be well luted, then light a gentle fire

about the Pot, which is above ground, and encreaſe it till it be red-hot; thus the fire acting upon the wood, liquifies thoſe parts of it that may be liquified, and ſends them through the holes of the *partition* into the lower Pot, which is that we call a Diſtillation *per diſcenſum*; one muſt have ſome great *Recipients* like round Globes, capable of receiving a great abundance of Spirits, which ſome matters do yield with impetuoſity, and then they muſt be very large.

Matraſſes or *Bolts-heads* are likewiſe very good to digeſt and extract.

There is a ſort of double *Bolts-heads*, when the neck of one *Matraſſe* or *Bolts-head* is inſerted into the neck of the other: the lowermoſt containing the matter, and the uppermoſt receiving the Spirits, and ſending them down again, that they may the better open and digeſt the ſubſtances they come from. This Veſſel is uſed in our moſt excellent Operations, and for very ſubtil matters. There is another ſort of double Veſſel, which is a Glaſs *Cucurbite*, or Body covered with a blind head, that has no noſe or ſpout; this is uſeful in circulating matters, that are not ſo ſubtil as thoſe that are done in *Matraſſes* or *Bolt-heads*: they muſt both be carefully luted in their joints, or where they unite *Twians* or *Pelicans*, are very neceſſary; they are two *Retorts*, or other diſtillatory Bodies and Heads, made all of one *pecte*, ſwimmed in ſuch manner, that their ſpouts or noſes are reciprocally inſerted into the Bodies of

of each other, they are uſed for the fixing and encorporating of Spirits, and the volatilizing fixt Bodies by circulation.

We cannot be without the uſe of *Aludels*, and ſubliming-Pots made of different pieces placed and inſerted upon into one another: the matter to be ſublim'd, is contained in the *Aludel*, or lowermoſt Pot, of a different figure from the others, as may be ſeen in the Table here repreſented; the pots that are on the top, do enter into one another, but muſt be carefully luted in their joints, and bored through, to give way to the flowers that riſe, except the uppermoſt, which muſt be covered, and is a ſort of blind Head, and in which, after you have gently unluted the Veſſels, you find a great part of the flowers ſticking, as in the other, and the higher the Veſſels are, the purer the Flowers; and thoſe which riſe to the top are always the beſt, and ſo downwards, diminiſh in purity.

You muſt have Crucibles, and earthen Pans, or Calcining-Pots, with covers to calcine, melt, cement, cupel, or caſt, and perform ſuch like Operations; as likewiſe of little earthen rounds or moulds fit to hold up, raiſe, and contain the Crucibles in the fire: your Laboratory muſt not be without an Iron-Veſſel like a Cornet or Cone of Paper, into which you pour your *Regulus* of *Antimony* and other Minerals when they are melted; for in this Veſſel the ſeparation is made eaſily, the *Regulus* faſtning to the bottom in a *Cone*, and the dregs or droſs remain above, eaſily taken away. Beſides, you

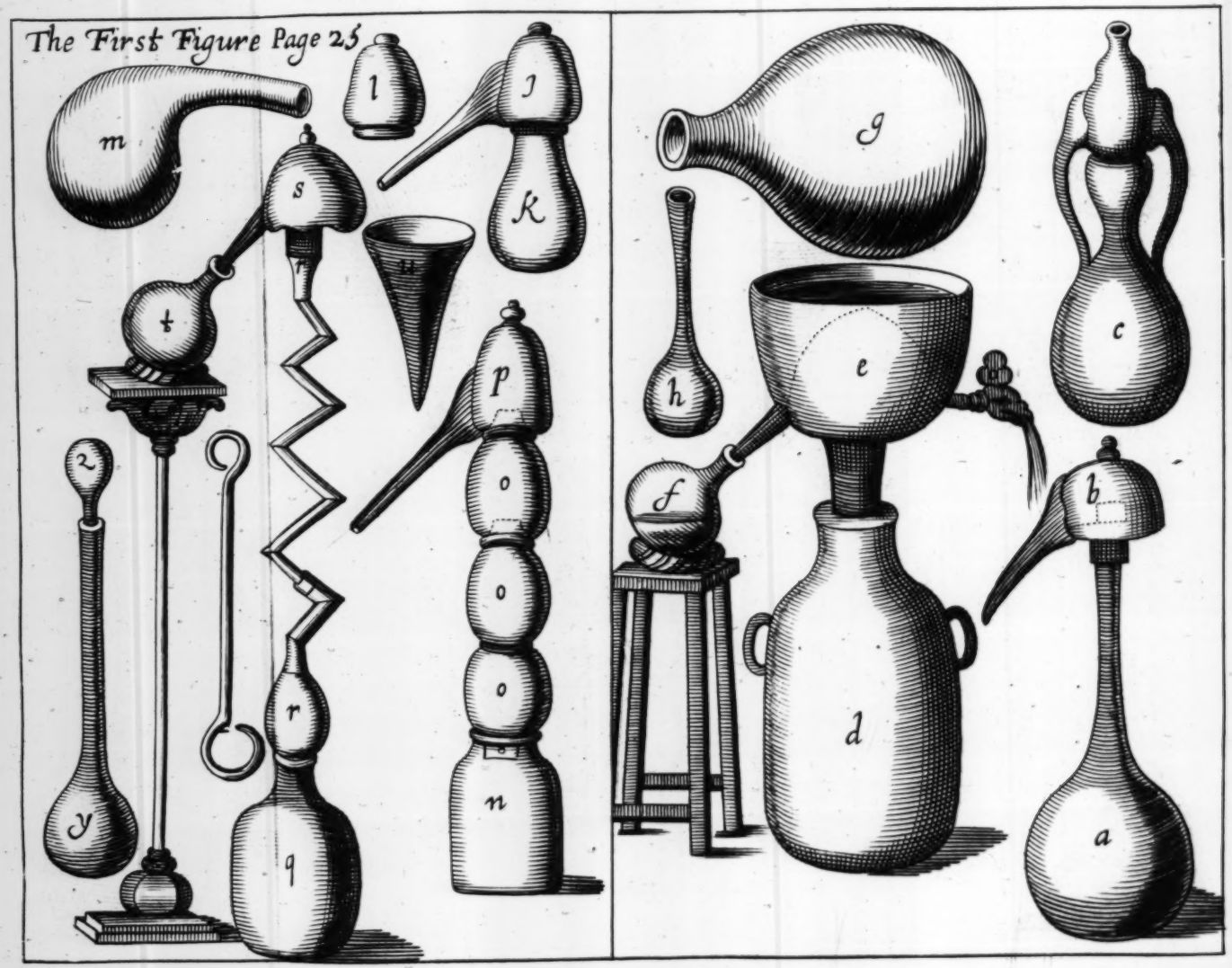
ſave a great many Crucibles; for if you did let your *Regulus* cool in your Crucible, you would be forced to break it, whereas now the ſame Crucible may ſerve a great many times.

You muſt be well provided of Diſhes, earthen Pans, Baſins, Pots, *&c.* to Evaporate, Chryſtallize and Diſſolve by a *Deliquium*, and many other operations, as likewiſe of Glaſs Tunnels and Bottles fitted to them, and to receive thoſe Liquors which you intend to filtrate or paſs through thoſe Tunnels, and of an infinite of Glaſs Pots and Bottles, and Veſſels of all bigneſſes and faſhions to keep their Preparation. I ſhall not here ſpecifie an infinity of other Veſſels and Inſtruments, as Braſs, Iron, Marble, and Glaſs Mortars, Braſs and earthen Veſſels for *Balneum Mariæ*, *Spatula's*, Pallets, Roundles of Iron, and Ladders to bear up Strainers, cutting Irons, Ladles, Pincers, and Tongs of Iron, great and ſmall, without which a Laboratory is not compleat out. I think I have hear deſcribed the moſt neceſſary, which I now expoſe in a Table to your view; nor will I ſpeak of innumerable other Veſſels, which Artiſts do continually invent, for particular operations, which it is impoſſible to deſcribe exact.

The Explication of the Figures of the Veſſels.

A. A great *Bolt-head* or *Matraſs* ſerving to rectify Spirits, and ſublime volatile Salts.

B. Its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B. Its Head or *Limbick* with a noſe or ſpout; having a narrowed neck fit for its *Bolts-head Matraſs* and well luted, to receive the volatile Spirits, Salts, which aſcend.

C. A *Pelican* or Circulating Veſſel, all of a piece.

D. The Body or Braſs *Veſica* of the *Refrigeratory*, tinn'd within, containing the matter to be diſtilled.

E. The head of the *Refrigeratory*, likewiſe of Braſs tinn'd within, to receive the Spirits that mount, and containing ſeparately cold water to condenſe the riſing Spirits.

F. A ſmall *Recipient* to receive the Liquors that diſtill, ſet upon a ſtool with a round of Straw betwixt them, to hold and ſtay the bottom of the Receiver.

G. A great Globe *Recipient* to receive thoſe Spirits that are driven out impetuouſly by a fire of Reverberation.

H. A ſmall *Bolts-head* or *Matraſs* for ſeveral uſes.

I. An Head or *Lembick* of *Glaſs*, with its ſpout for diſtilling.

K. A *Cucurbite* Gourd or Body containing the ſubſtances to be diſtilled; it may be of Glaſs, Earth, Pewter, or Braſs tinn'd within.

I. A blind Head without a ſpout.

M. A *Retort*.

N. The lowermoſt Subliming-Pot, called an *Aludel*, containing the matters to be ſublimed into dry Flowers; having on one ſide a little Pipe, with its ſtopper, to put in materials at.

OOO. Three Pots thorough bored, placed one upon another on the top of the *Aludel*, and well luted in their joynings.

P. An Head to cover the ſaid Pots, luted in the jointure.

Q. A Braſs *Veſica* or Body tinn'd within, containing Spirit of Wine to be rectified.

RRR. A Braſs-head tinn'd within, to place upon the *Veſica* or Body, upon which is ſauder'd a Pipe or Worm fit to carry the Spirits upwards; and having on its top a Tunnel likewiſe ſaudered, upon which one fits a Glaſs-head.

S. The *Glaſs-head* or *Limbick* to receive the Spirits, and reſolve them into Liquor by means of the cold air.

T. A *Recipient* for the Spirit that is diſtilled.

V. A Glaſs-tunnel.

XX. An Iron-Inſtrument to cut the necks of *Retorts* and *Receivers*, we call it a Cutting-Iron.

Y. Half of the double Veſſel containing the materials.

Z. The other half of the ſaid Veſſel ſet above, to receive the vapours, and ſend them back again upon the ſame ſubſtances. They muſt be exactly luted in their joinings.

CHAP.

CHAP. VIII.

Of the Conſtruction and variety of FURNACES

AS *Chymiſts* cannot be without Veſſels to contain their Matters, ſo neither is it poſſible for them to work thereon according to their purpoſes, unleſs thoſe Veſſels themſelves be ſo placed by ſome ingenious contrivance that the Fire may be increaſed, abated, and governed as ſhall be needful. And to ſay truth, they have been but too ingenious in inventing theſe *Furnaces* having encreaſed many infinity of diverſe proportions and figures, not conſidering the ſimplicity of Nature, even to confuſion. This has made great Artiſts make uſe but of one *Furnace* for all their Operations, imitating in that Nature, which as much as it can is ſingle, and delights in unity, not multiplying any Inſtrument without neceſſity. But nevertheleſs, becauſe there may be occaſion of making the ſame Operations upon the like matter at the ſame time, and likewiſe becauſe that in building different *Furnaces* according to the different degrees of Fire, one may with more exactneſs

neſs compaſs one's intention; we have thought fit to deliver the way of raiſing different *Furnaces*, and amongſt them the Conſtruction of one which may ſerve in a need for all neceſſary uſes.

And *Firſt*, Before we ſpeak of their form, or figure, we will deliver the Matter they are to be made of, as well thoſe that are Portative, as the fix'd ones.

The fix'd ones muſt be built of Brick, and that Clay or Earth, with which Bakers make their Ovens, which muſt be well mingled and kneaded with a third part of Horſe-dung.

The *Portative*, or movable *Furnaces* are to be made of Potters Earth, and Potſheards beaten together to Powder, and well mixed with the Earth, thus are made Crucibles, and other Veſſels, that muſt endure much Fire.

Every *Furnace* muſt be divided into four parts and ſometimes into five. The *Firſt* is, the Aſh-hole, with it's door. The *Second* is the Grate. The *Third* is the Fire-hole, with its door. And the *Fourth* is the place that the Veſſel is to be ſet in: In which ſpace there ought to be four Holes or Regiſters, by the opening or ſhutting of which the fire is to be governed. The *Fifth*, when neceſſary is, the *Domo* or *Cupola* over the Veſſel which ſtops up the Regiſters, and therefore in their room muſt have a Hole in the top to be opened and ſhut as the Regiſters were.

We ſhall now begin by deſcribing that *Furnace*,

Furnace, which the Artiſts have named *Piger Henricus*, or, *Slothful Harry*; ſo called becauſe it requires not to be ſo exactly looked to, and watched as other *Furnaces* do. It is called likewiſe *Athanor*, which in *Arabian* ſignifies a *Furnace*; it is ſo called for its excellence, becauſe it is very uſeful to perform many Operations at once, ſave Coals, and to refreſh the Artiſt, becauſe the heat which the Tower communicates to the neighbouring parts may be eaſily governed.

This *Furnace* has three parts. The *Firſt*, is the Tower, which contains the Fire, and as much Coals as can be conſumed by it in 24 hours. The *Second* is a *Furnace* for the *Balneum Mariæ*: and the *Third* a *Sand Furnace*: and if the place be big enough one ſhould add a *Furnace* with Aſhes. The firſt part, which is the Tower ought to be at leaſt three Foot high and eight or nine Inches in its diameter, round within and very ſmooth, it muſt have it's Aſh-hole with its door to take out the Aſhes; it muſt likewiſe have a grate, and under it another door, by which one may make clean the Tower, in caſe it be foul: a collection of Stones, Earth, or other impurity happening amongſt the Coals, which may ſtop the Grate and hinder the Fire. The Tower muſt have on each ſide a little above the Grate, a hole of about five Inches high, and four Inches wide, by which the heat of the Tower may be communicated to the *Balneum Mariæ Furnace*, and to the *Sand Furnace*;

Furnace; which may likewiſe have their Aſh-holes, or Grates by themſelves, that ſo by putting in Coals they may be heated, without heating the whole Tower; they muſt likewiſe have their Regiſters: one may likewiſe fix an earthen Pan upon the top of the Tower over the hole by which the Coals are put in, and lute it well, and ſo filling it with Sand or Aſhes, one may place it a Veſſel either for Diſtilling or Circulating.

There is another ſort of *Furnace* for digeſtions in which one may likewiſe perform many other operations at the ſame time, and ſave Coals; its Figure is in the third Table, it is compoſed of three Parts or *Furnaces*, joyned to one another by ſtories. The Firſt, which is that which contains the Fire, is made of an Aſh-hole and its door, a Grate, and Fire-hole, of a ſpace to contain Coals enough to maintain an equal Fire for twelve hours, and of a *Capſula*, or Veſſel to contain Sand, in which are put the Glaſſes or other Veſſels for the Operation; all the difference between this *Furnace* and others is, that inſtead of the four Regiſters, one at each corner, there is an overture or hole within, by which the heat is communicated to the ſecond *Furnace* joyned to this, and from thence to the third. In the *Firſt* one may Diſtil by Retorts; in the *Second* by *Cucurbites*, with their *Limbeck* heads; and the *Third* is for Digeſtions, Extractions, and other ſuch Operations: and yet the expence is no greater than for one

Furnace

Furnace: for whereas the heat of the Fire in ordinary *Furnaces* is loſt, through the Regiſters, here it is retained and communicated from *Furnace* to *Furnace*; they that have room enough may add a *Furnace* or two more, and by the ſame Fire make five or ſix ſorts of degrees of heat.

There is required a *Furnace* by it ſelf for the Braſs *Veſica*, with its Refrigeratory, or Moors head to Diſtil and rectify in it Spirit of Wine, and the Spirits of other fermented Vegetables, as likewiſe to Diſtil Aromatick Oyls.

A Furnace of cloſe Reverberatory is neceſſary for the Diſtilling of *Aqua Fortis*, *Spirit of Salt*, *Niter*, *Vitriol* and others: and the ſame *Furnace* may ſerve to Calcine and Reverberate Metals and Minerals, it ought to be compoſed of five parts. The Firſt is the Aſhhole; the Second, the Grate; the Third the place where the Fire is put in; the Fourth, is, the ſpace which contains the Retorts, or other Veſſels, which reſt upon two Iron bars; and Laſtly, there is a Cover either round or ſquare, which Reverberates the Fire. And there is is another flat Cover to be uſed when one is to Reverberate any thing with a flaming Fire of Wood.

Beſides this *Furnace*, Artiſts have another *Furnace* of Reverberation, very fit for Calcinations and Reverberations of Metals and Minerals, which are to be reduced to *Crocus's* or Impalpable Powders by the force of the Fire.

Its

Its Figure is in the third Table, it is ordinarily made of three parts. The firſt is to contain the Wood; the ſecond and third are for the things to be operated upon, which, when they are done by the flame of Wood, are ſpread upon thin Iron-plates, or upon Tiles; one may add the fourth, fifth, and ſixth Story, the flame going Serpent-wiſe from one Story to another.

One muſt have a *Wind-Furnace* for melting of Minerals and Metals, and for *Vitrification*; the Aſh-hole of this *Furnace* muſt be pretty high, and the Overture wide, that the wind may enter with eaſe.

This *Furnace* ought to be round within, it is made large or ſmall, according to the quantity of matter you intend to melt: over the Grate there muſt be a door for the Charcoal to be put in. The Fire-hearth muſt be about a foot-high, and covered with a ſtrong covering of good Crucible-Earth, conſiſting of two pieces, that ſo the one half may be taken off when a Crucible is to be placed in, or removed from the fire. This covering muſt be made in form of an half-Globe, having an hole in the top, in which may be thruſt one, two, or three Pipes one upon another, for the better concentrating of the heat about the Crucible. This very *Furnace* may alſo ſerve for the Sublimation of *Antimony* and other Minerals, by taking away the Covering, and placing an Iron-Bar croſs the fire-place, whereon to ſet the Veſſel containing the matter to be ſublim'd.

Now

Now for the eaſe of thoſe who will not, or cannot have a great Laboratory, I will deſcribe an *Univerſal Furnace*, ſerving for all Chymical Operations, and portable. This *Furnace* conſiſts of one ſingle piece, beſides the Covering, and of very good crucible-Earth; after it is made and dry'd, it muſt be bak'd in ſome Potter's *Furnace*; by which means it will laſt a mans life. The height of the Aſh-hole muſt be ſix Inches, with a door for drawing forth the Aſhes, and giving Air to the Fire. The Iron Grate muſt be plac'd over it for the Fire to lye on. The inſide of the *Furnace* muſt be narrow downwards in form of a Scuttle, to the end the Grate may reſt on it; and wide upwards. The Fire-place muſt be nine Inches in height, to the place where two Iron Bars are to be ſet for ſupporting the Veſſels. Theſe Iron Bars muſt be movable for calcining or diſtilling any matter. The *Furnace* muſt be ſix or ſeven Inches high above them, and in that upper part a half-round notch muſt be made, for letting through the neck of a Retort, with a piece of the ſame earth fit to the ſaid notch, and to be put to, or taken away upon occaſion of diſtilling otherwiſe than by the Retort, or of placing a *Balneum Mariæ* or Sand there.

Laſtly, This *Furnace* muſt have its cover in form of a *Cupelo*, with a large hole in the middle thereof for governing the Fire, by opening the ſame more or leſs, according as you ſee fit. The Diameter of this *Furnace*

may be greater or leſſer, according as the Artiſt is minded to work upon little or much matter. He muſt not forget to make four holes in the top of the *Furnace*, to ſerve for *Regiſters* in thoſe Operations in which the round Head or *Cupolo* is not neceſſary; as alſo four Stopples wherewith to ſhut and open the ſaid Regiſters, as well as two others to ſerve for the like uſe to the doors of the Fire-place and Aſh-hole; which is to be obſerved in all ſorts of *Furnaces*. When you are minded to diſtill *in Balneo*, you muſt get a round Kettle proportionable to the opening of the *Furnace*, and ſo likewiſe a *Veſica* of Copper of the ſame proportion, or what other Veſſel you think good to employ for rectifying the burning Spirits of Vegetables. For diſtilling in Sand, you muſt have a good Earth of the like proportion, wherein to put the Sand. For Reverberation, place the Retort upon the Iron Bars, and cover it with the round Head or *Cupolo*.

When you would Calcine or melt, take away the Iron Bars, that you may let the Pot down upon a little round Plate, which is to be put upon the Grate.

I omit here to ſpeak of the *Lamp-Furnace*, becauſe it is not uſeful in a courſe of Chymiſtry which allows not time for long preparations, as thoſe of this *Furnace* are. The curious may find the ſame in other Authors, to whom I refer them.

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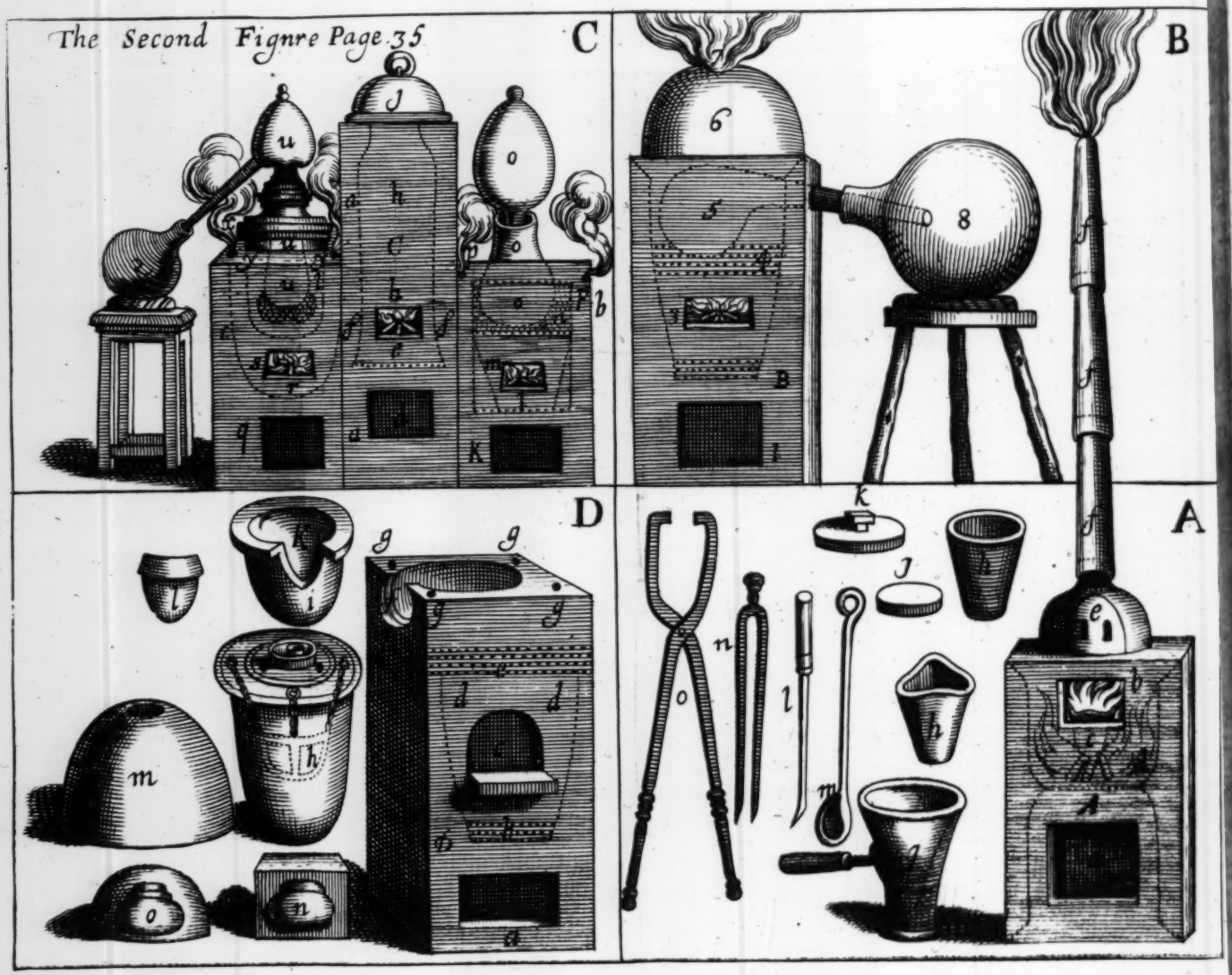
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A

The Explication of the Figures of Furnaces *in the Second Table.*

A. A *Wind-Furnace* for the melting of Minerals.

A. The Aſhh-hole.

B. The Fire-place, ſerving alſo for the putting in and viewing of materials.

C. A *Crucible*, containing the materials to be melted.

D. The Grate.

E. The *Cupolo*, which covers the ſaid *Furnace*, having a hole in the middle of the top.

F. Pipes, ſerving to repel and reſtrain the Fire.

G. An Iron *Cone*, for caſting any *Regulus*.

H. A *Crucible*, round at the top.

H. A *Crucible*, triangular at the top.

I. A round Earthen Plate, capable to endure the Fire, to be plac'd under *Crucibles* in *Furnaces*.

K. A Copper for *Crucibles*.

L. A Fork, to cleanſe the *Furnaces*, and to try if the Fuſion be perfect in the *Crucibles*.

M. An Iron Spoon or Ladle.

N. Iron Tongs.

O. Great Iron Pincers, to put in, and take out the *Crucibles*.

B. A *Reverbaratory Furnace.*

1. The Aſh-hole.
2. The Grate.
3. The Door of the Fire-place.
4. The Fire-place.
5. The Retort.
6. The *Cupolo*, or Cover of the *Furnace.*
7. The Hole in the top of the *Cupolo*, for regulating the Fire.
8. The great *Recipient.*
9. The little Stool that ſupports the *Recipient.*

C. The *Furnace Athanor*, or *Piger Henricus.*

AA. The Tower which contains the Coal.
B. The *Furnace* for Sand.
C. The *Furnace* for *Balneum Mariæ.*
D. The Door of the Aſh-hole of the Tower.
E. The Grate.
FF. The Fire-place.
G. The Door of the Fire-place.
HH. The top of the Tower wherein the Coal is.
I. The *Cupolo* of the Tower.
K. The Door of the Aſh-hole for Sand.
L. The Grate.
M. The Door of the Fire-place.
N. The Sand.
OOO. The Gourd, containing the materials, having on the Top its blind *Alembick*, which

which makes a ſort of double Veſſel.

PPPP. The four Holes or Regiſters, for regulating the Fire.

Q. The Aſh-hole for the *Balneum Mariæ.*

R. The Grate.

S. The Door of the Fire-place.

T. The Veſſel of the *Balneum Mariæ.*

VVV. The Gourd, containing the matter, with its *Alembick.*

X. A Copper Ring for the top of the Gourd.

YY. The Regiſters.

Z. The *Recipient.*

&. A Head-Ring, ſerving for a counterpoiſe to the Gourd, faſten'd to the neck-bottom thereof.

D. An univerſal *Furnace.*

A. The Door of the Aſh-hole.

B. The Grate.

C. The Door of the Fire-place.

DD. The Fire-place.

E. Iron Bars to ſupport the Veſſels, and movable.

F. The Notch, for the Neck of the Retort.

GGGG. The Four Regiſters.

H. Balneum Mariæ, containing the Veſſels with Water for the materials.

I. An Earthen Veſſel, reſiſting the Fire, for diſtilling in Sand.

K. The notch of the ſaid Veſſel to let out the neck of the *Retort*.

L. A piece of the ſame Earth, to open and cloſe the ſaid notch.

M. The *Cupolo* of the ſaid *Furnace*.

N. A Stopper for the Aſh-hole.

O. A Stopper for the Fire-place.

Explication of the Figures of Furnaces in the third Table.

A. A great *Furnace*, compoſed of three parts.

a. The firſt part, containing the Fire, and ſerving to Diſtill by *Retort*.

b. The ſecond part, proper for Diſtillations by *Alembick*.

c. The third part, proper for *Digeſtions*.

d. The Aſh-hole, with its door.

e. The Fire-place, with its door and grate.

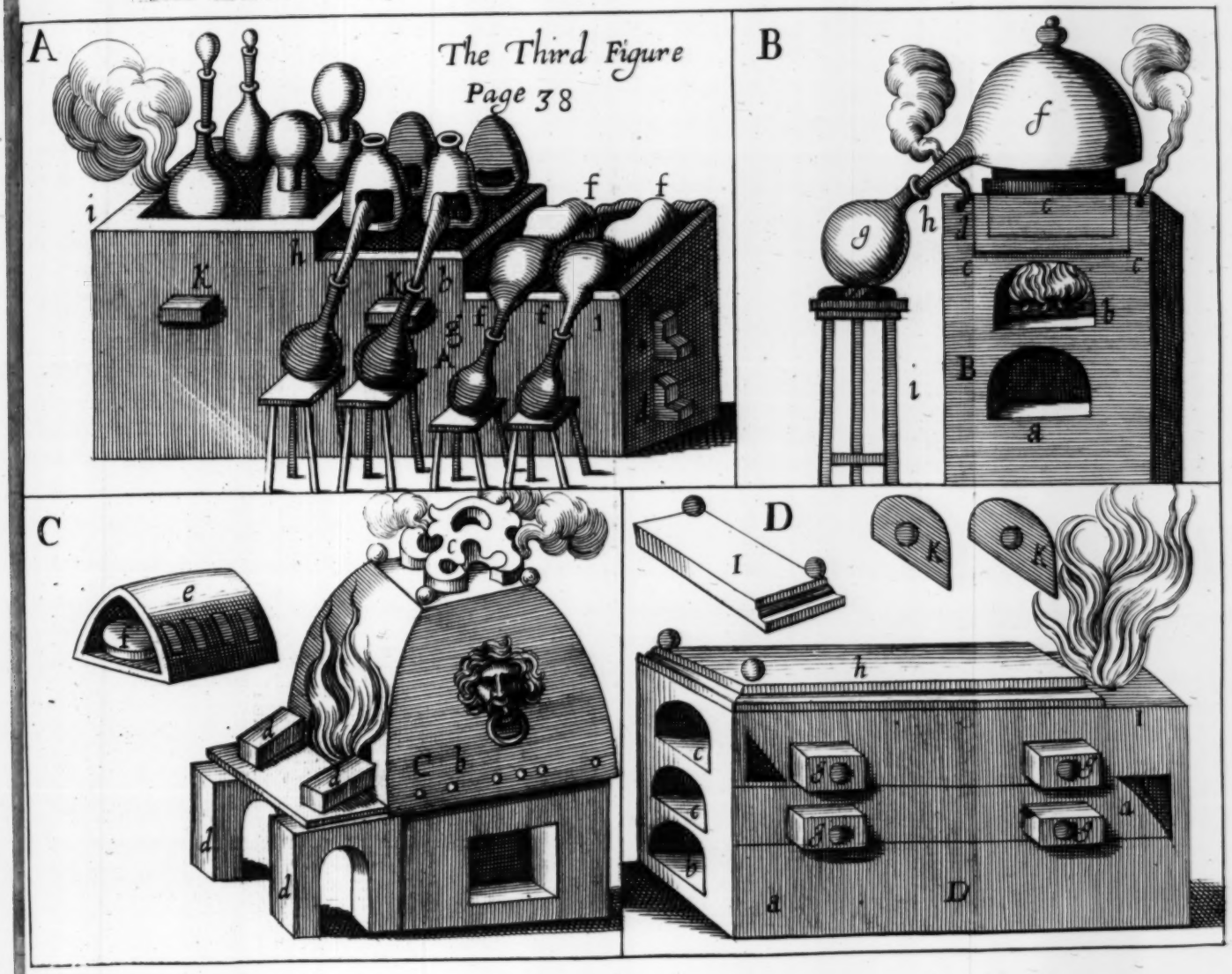
ffff. The notches of the Pot or Pan, which contains Sand for reſting the necks of *Retorts*.

g. The place by which the heat of the Fire enters out of the firſt part into the ſecond.

h. The place where the heat enters out of the ſecond into the third part.

i. An hole for the ſmoke to go out, ſerving alſo for a *Regiſter*, by being opened and ſhut.

kk. Doors,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D

k k. Doors, by which Salts or other things to be dried, may be ſet into the cavity of the Furnace.

B. A Furnace to diſtill Herbs without addition.

a. The Aſh-hole, with its door.

b. The Fire-place, with its door and grate.

cc. Bars of Iron to ſupport the Pan.

d. An earthen-Pan containing Sand, which keeps the leaves of Vegetables from burning, and their diſtilled Waters from taſting of the fire.

e. A Copper-Veſſel, containing the Herbs.

f. An *Alembick* of Pewter.

g. A *Recipient* of Glaſs.

h h. Regiſters, for governing the fire.

i. A foot, to ſupport the *Recipient.*

C. A *Furnace* to make aſſay of Metals, or teſt them.

a. The foot of the *Furnace,* which muſt have four holes, one at each corner, for intromiſſion of much air to the fire.

b. The upper part, which is to be taken off when you ſet in the *Muffle* with the *Cuppel.*

oooo. The place where ſeveral bars of Iron are put to ſupport the *Muffle* with the Coal.

o. The Covering, having divers holes to let out the ſmoke.

dddd. Divers pieces of good bak'd-Earth, to keep up the burning-coal before the door of the

the fire-place, leſt the air cool the *Cuppel.*

e. The *Muffle.*

f. The *Cuppel.*

g. The door of the fire-place, in which the *Muffle* is placed.

D. A *Reverberatory* Furnace.

a. The fire-place.

b. The door of the fire-place, into which the Wood is put.

cc. Flat pieces of Earth, upon which the matter to be Reverberated, is laid.

d. An opening, by which the flame paſſes from the fire-place to the firſt ſtage.

e. Another opening, by which the flame paſſes from the firſt ſtage to the ſecond.

f. An opening, for the flame to go out.

gggg. Little doors, at which to look upon the matter, during the *Reverberation.*

h. The great Cover.

i. The little Cover, with which the fire is governed.

kk. Doors, to ſtop the firſt and ſecond ſtage, after that the matter to be *Calcin'd*, is ſet in.

CHAP.

CHAP. IX.

Of the Lutings of Furnaces and Veſſels.

'TIS not enough to have ſpoken of the diverſity of Veſſels, and of the conſtruction of *Furnaces*; 'tis alſo fit that the Artiſt know how to manage, cut, and adjuſt them one with another; and in caſe of need, if he cannot make all the Veſſels, he muſt learn to make part of them, as Crucibles, Pans, with other Fire-veſſels, and likewiſe all the matter of his *Furnaces*.

The *Paſte* for Portable *Furnaces* is compoſed of fat Earth, or Potters-clay, and of broken Pots groſly powdered, which commonly they call Cement. You muſt take two parts of fat Earth, dry it, and powder it; and three parts of the ſaid Cement in powder. Mix them well, and with water make a Paſte, of which form your *Furnaces*; dry them firſt in the ſhadow, and afterwards bake them in a Potters *Furnace*. Obſerve that when the Earth is extremely fat, the quantity of Cement muſt be augmented, leſt the *Furnaces* cleave in drying; which will happen, unleſs ſufficient quantity of powder of broken Pots be added.

This

This very compoſition of Earth may alſo ſerve for the conſtruction of *Aludels*, *Pans*, *Gourds*, *Crucibles*, and other Veſſels deſtinated to the violence of the fire; which they will reſiſt, provided you take care to make the powder of broken Pots finer than for *Furnaces*. You muſt alſo let them dry gently, and then bake them.

The *Paſte* or *Lute* for immovable *Furnaces* muſt be made of two thirds of that Earth with which Bakers make their Ovens, and one third of Horſe-dung well cleanſed and ſifted, which muſt be tempered with water, and well wrought together. This Paſte ſet in a Cellar in a Tub, putrifies, and becomes ſo managable, that it may with great eaſe be employed for the conjunction of the Bricks, wherewith we ordinarily build fix'd Furnaces, which muſt be thick, as well to preſerve the heat, as to laſt a long time.

As for the luting of *Retorts*, whether of Glaſs or Earth, which are to be expoſed to a violent fire, as alſo for luting and joining the *Recipients* with the *Retorts*, take ten parts of the above-mentioned putrified Paſte, one part of the flakes of Iron, one part of powdered Glaſs, two parts of the *Caput-mortuum* of *Aqua-fortis* beaten to powder, and incorporate them well all together.

In the *Cohobation* or *Rectification* of Spirits or *Æthereal* Oils, there is nothing better to keep them from evaporating, than the bladder of an Hog or Ox, applied wet round about the joining

joining of the Gourd to the *Alembick*, and that of the *Alembick* to the *Recipient*. It alſo ſerves for joining double Veſſels; for as it dries, it makes a kind of Glew, which becomes hard, and by that means binds the Veſſels perfecty well together. But note that Corroſive Spirits conſume the bladder in a moment, and then fly away. To retain their Spirits, uſe the following lute.

Take Wheat-flower, and unſlak'd-Lime powdered, and with the white of an Egg make them into a Paſte, which apply preſently to the joints with a fine rag. The cracks of *Recipients* and other Veſſels may be mended with this Lute, provided ſome *Minium* or *Litharge* powdered, be mix'd with it.

Sometimes the neck of the Veſſel, which is to be ſet for digeſtion, is ſtopt by the melting of it; this they call *Hermetical Sealing*, and it is practiſed in *Pelicans*, and long-neck'd Veſſels. When the materials are put into them, a Charcoal-fire is applied round about the neck of the Veſſel; which fire muſt be kindled with diſcretion, to the end the Glaſs may be heated by little and little, without breaking. Then the fire is to be encreaſed till the Glaſs melt, which muſt in that condition be wreathed with hot tongs, till there remain no hole at all.

But in as much as ſuch Veſſels are uſed but ſeldom, eſpecially the *Pelicans*, and this ſort of luting renders them incapable of ſerving more than once; you may make a Paſte of a mixture of *Maſtich*, *Venice-Glaſs* powdered, *Borax*, and

and the white of an Egg, with which Veſſels may be ſtopt, and let the ſame dry with a gentle heat. Afterwards melt this Lute with a ſmall Reed at the flame of a Lamp. You may alſo ſeal *Hermetically* with a Lamp thin Glaſs-Veſſels, which have a narrow mouth, and long neck.

CHAP. X.

Of the degrees of Fire.

THE Furnaces being built, and the Veſſels provided, and luted, (ſuch as require it) the next thing is to make choice of, and to manage the Fire ſuitably to the matter you work upon. To this purpoſe 'tis fit to know what Fires are more or leſs violent. The gentleſt of all is the *Balneum Vaporis*, which is, to hang the Veſſel containing the matter, juſt over the *Balneum Mariæ*, that ſo it may receive the ſteams of the water, which may be heated more or leſs even to boiling.

The next degree of heat is the *Balneum Mariæ*, which conſiſts in placing the Veſſel containing the matter, in another Veſſel containing water; which may be kept either *tepid* or boiling, as occaſion requires. But leſt the water lift up, and overturn the Veſſel, as it will be

be apt to do, eſpecially when there is but little matter within it; and alſo leſt the bottom of the Veſſel touch the bottom of the Bath, and endanger the breaking of it; 'tis uſual to faſten to the bottom of the Veſſel a circle of Lead environ'd with ſtraw, to ſerve as a counterpoiſe to the Veſſel, and to ſecure it from touching.

The next Heat is that of Aſhes, improperly term'd a *Bath*; which Aſhes muſt be ſifted, and put into an earthen Pan that reſiſts the Fire. Place the Veſſel in theſe Aſhes as deep as the matter it contains. The Heat of Sand follows next, as being a degree beyond the former; 'tis improperly called a *Bath*, but is ordered after the ſame manner.

Filings of Iron come next, aud afford a greater heat than Sand.

The cloſe *Reverberatory* Fire follows; it ſerves for drawing of Spirits, and is made with Charcoal.

The laſt is the Flaming-Fire, or Fire of *Fuſion*; 'tis the moſt violent of all, and is made with Wood, but ſometimes too with Charcoal, for *Calcining* and *Reverberating* things.

Each of theſe ſorts of Fire hath its degrees, eſpecially the Violent, as well by encreaſing the Fewel, as by opening the *Regiſters*. Hence you are directed to a Fire of the firſt, ſecond, third and fourth degree, eſpecially in the Diſtillation of Spirits.

Beſides

Beſides theſe, there are the *Lamp*, the *Dung-hil*, the *Burning-Glaſs*, and others; of which, for brevity-ſake, I ſhall ſay nothing; becauſe thoſe already mentioned ſerve for all the Operations intended in this Treatiſe.

A Trea-

A TREATISE OF Chymiſtry.

Book II.

Certain Remarks preliminary to the following Preparations.

IN the Firſt Part of this Treatiſe we have ſpoken in few words what ſeemed neceſſary concerning the Names, Uſefulneſs, and Definition of Chymiſtry; as alſo concerning its Object, Matter, and Functions. We have alſo

alſo ſpoken of its Principles, and the ſeveral Operations whereby the ſame may be ſeparated and purified. We have likewiſe deſcribed the Figures of Veſſels, and their Variety; the conſtruction and matter of *Furnaces*, the diverſity of *Lutings*; and laſtly, the manner of giving and graduating Fire; without the action whereof, all the reſt would be uſeleſs. Theſe Generals will not perplex the mind, and yet they will afford a Theory ſufficient for Practice; to which we ſhall now proceed.

But before we enter upon it, our End being to propoſe plainly all the Preparations as well in Writing as in Working, we have thought fit to acquaint the curious Reader with certain Remarks, of great moment both to his Deſign and ours. Inaſmuch therefore as natural Bodies are infinite in number, and very different in ſubſtance and form, both internal and external, great variety of means and inſtruments muſt be employed as well to open them as to ſeparate their parts. For Metals and Minerals require to be handled otherwiſe than Vegetables and Animals; and even the preparation of Metals and Minerals is different according as they are more or leſs perfect, compact or porous, fixt or volatile. For example, the Oils of Vegetables are capable to diſſolve or extract the Sulphurs of Minerals; but the extraction or diſſolution of ſome is much more eaſie than that of others. As we ſee, common Oil will totally diſſolve common Sulphur, if they be put together

gether upon the Fire; and that becauſe of the great correſpondence that the Sulphurs of Minerals have with the Oils of Vegetables. Lead, which hath acquired a greater perfection than common Sulphur, needs help, and cannot be united with Oil, unleſs it be reduced into Powder, Calx, or Litharge; after which, its whole ſubſtance eaſily incorporates with Oyl, by means of the Fire and a gentle agitation. This gives us to know, that Lead is almoſt nothing elſe but Sulphur, and a terreſtrial Salt. For if it contain'd much Mercury, Oils having no correſpondence therewith, could not diſſolve it totally as they do. Which remark may ſerve to undeceive certain curious perſons, who accounting Lead more perfect than it is, eagerly ſeek for Mercury in its Body. Which I adviſe them well to conſider.

Antimony is a Mineral, which contains in itſelf much *Sulphur*, indigeſted, and diſſolvable in Oil as well as common *Sulphur*. For 'tis a *Sulphur* ſuperficially joined to the *Antimony*. Nevertheleſs, if *Antimony* be not opened by *Sublimation*, and reduced into Flowers, or an *Alkool*, 'tis impoſſible to make a Diſſolution of it. But being reduced into that ſtate, Oil penetrates it, and joins it ſelf with its ſulphureous part, leaving the reſt apart, which could not in any wiſe abandon that ſulphureous part of the *Antimony*, before it was ſo reduced.

By theſe Examples of common *Sulphur*, *Lead* and *Antimony*, 'tis eaſy to underſtand, that the more compact or perfect a Metal is, the more it ought to be opened and diſpoſed to the ſeparation of its ſuperficial *Sulphur*; I ſpeak not of that which is internal and eſſential, ſince we believe Metals indiviſible; unleſs any man will pretend to reduce them into their Principles, or ſeveral ſubſtances by the *Alkaheſt* or univerſal *Diſſolvent*, of which I ſhall not diſcourſe here, for fear of offending ſome, who think they poſſeſs it, and yet have not even good particular *Diſſolvents*, or of being eſteemed too incredulous by thoſe that ſeek it. If we ſhould ſay that 'tis hard to imagine how a Liquor without *Corroſion* can reſolve all Sublunary Bodies into their true Principles, without any reaction on their part; and how this *Diſſolvent* ſhould diminiſh neither in weight nor vertue, but have as much ſtrength after a thouſand Diſſolutions, as in the firſt; as *Van Helmont* diſcourſes of it. Wherefore wanting this myſtery, we maintain, that whatſoever form is given to Metals by the ordinary Diſſolutions, which are properly *Corroſions*, they remain always reducible into their firſt ſubſtance, with little or no alteration. So the Eſſences or Tinctures, and the Oils pretended to be drawn from Metals, are, to ſpeak properly, nothing but Metallick Subſtances diſguiſed by the diviſion of their integral parts, and by their union with the *Diſſolvents*; but ſo that they may be ſeparated from the ſame,

and

and reduced into Metallick Bodies, in the ſame form which they poſſeſſed before they were diſſolved.

And upon this occaſion we might ſay ſomething further againſt thoſe who boaſt of poſſeſſing the true *Tincture* or *Eſſence* of Gold, its *Sulphur*, and its *Mercury* irreducible into a Metallick Body. In a word, who think they have the true Potable Gold, of which they tell wonders, and by which they pretend to remove all ſorts of Diſeaſes, and to make men live as long as the firſt Patriarcks. This ſort of People are more diſeaſed themſelves, than they whom they pretend to Cure, and were more worthy of pitty than puniſhment, if there were not ſome perſons credulous enough to believe their promiſes, and to loſe their Time, Eſtate, Health and Life, by the impoſture of theſe Ignorants. This is the ſource of the Scandals caſt upon true Chymiſtry; which being well conſidered, is found moſt worthy to be cultivated.

This by the way. Now, ſince Metals and Minerals are ſo different, there is requiſite almoſt to every one in particular, not only a different Preparation, but to overy Preparation a great labour both of Body and Mind, and manners of proceeding wholly diſtinct: which is the reaſon that general Rules for their Preparation cannot be eſtabliſh'd, as there may be for that of Vegetables and Animals. Nevertheleſs, they cannot be reduced without ſome Salts, Oils, or Spirits. But moſt Vegetables

need no addition, yet require different Preparations as well as Minerals. For ſometimes we deſign to reduce them diſtinctly into their five ſubſtances; ſometimes we deſire but one of them. For Example; we are contented to draw only the rozinous ſubſtance of *Jallap*, rejecting the other ſubſtances as uſeleſs. We draw by Diſtillation the eſſential Oil of *Aniſe*, and preſerve the ſame carefully, without regarding the remainder. Sometimes we *Calcine Tartar*, to draw out the fixt Salt, without minding its ſulphureous and *mercurial* parts, which are ſuffered to exhale or evaporate by the violence of the fire. When we extract the volatile Salt of *Urine*, we trouble not our ſelves aboutt the other Principles; as when we have made the Jelly of *Harts-horn*, we reject all the reſt; and ſo of infinite others.

Vegetables entire, or their parts, which we deſire to reduce into their ſolid Principles, hard or dry, as Roots, Barks, Gums, Seeds, Fruits, Leaves, &c. are firſt raſp'd or cut in pieces, or elſe powdered groſly, ſo as to be put into a *Retort*, which is placed in a *Reverberatory* fire, by means whereof comes into the *Recipient*, firſt the Flegm, next the Spirit, and afterwards the Oil. But the fixt Salt and Earth remain in the *Retort*, and are ſeparated afterwards by *Diſſolutions*, *Filtrations* and *Coagulations*.

The parts of Vegetables which are in a liquid form, as *Muſt*, and other juices, before their *Fermentation*, are diſtill'd by an *Alembick* in

in a fire of Sand, and yield firſt a quantity of Flegm, next the Spirit, and afterwards the Oil, leaving the Earth and Salt in the bottom of the *Alembick*.

If you deſire to draw the five ſubſtances of fermented Liquors, as Wine, Cider, Hydromel, Beer, and the like; whereas thoſe which are not fermented, ſend out the Flegm firſt; theſe ſend firſt their ſubtil and inflammable Spirit, and afterwards the Flegm; then they yield a Spirit and Oil ſmelling of burning, and leave the fix'd Salt and Earth in the bottom.

Liquors which have paſs'd a Fermentation even to a kind of corruption, as Vinegar of Wine, Beer, Cider, and others, render their Flegm firſt, then an *acid* Spirit, afterwards a Spirit, and *fœtid* Oil, leaving the Salt and Earth in the bottom.

Animals entire, or their parts, if dry, are cut into pieces, or reduced to a courſe Powder, in order to their being put into the *Retort*. If their parts be liquid, as Blood, Urine, &c. they are put into an *Alembick*. Both theſe Veſſels are ſet in a fire of Sand, by means whereof you draw firſt the Flegm, then Spirit, and volatile Salt, with a ſtinking Oil: and in-as-much as this Spirit and volatile Salt abound in Animals, they raiſe up the fix'd Salt, and carry it with them; ſo that the Earth remains alone in the bottom of the Veſſel.

Having thus deſtroy'd the firſt form of mix'd Bodies, you ſeparate the Principles, each by it ſelf. The Oil is ſeparated from the Spirit

and Flegm by a Tunnel; the Spirit is ſeparated from the Flegm by *Rectification*; and the Salt by *Elixation* and *Filtration* from the *Caput-mortuum*, or *Terra-damnata*, as we ſhall ſhew more clearly in due place.

This Second Part ſhall be divided into three Sections. The Firſt ſhall treat of the Preparations of *Metals*, *Metallick Bodies*, *Stones*, *Vitriols*, *Salts*, *&c.* The Second ſhall teach the Preparation of *Vegetables*. And the Third that of *Animals*; to which we ſhall join ſome Preparations of things not comprehended in theſe three Families, as *Manna*, *Honey*, *Wax*, *&c.*

SECT.

SECT. I.

Of Minerals.

CHAP. I.

Of Gold.

WE ſhall begin with *Gold*, which is the moſt pure, fix'd, compact, and weighty of all Metals, rendered ſo by the union of *Salt*, *Sulphur*, and *Mercury*, equally digeſted, and purified to the higheſt point. Hence it is juſtly called the King of Metals, as being the moſt perfect of all. 'Tis called alſo the Sun, as well for the reſemblance it hath with the Sun of the great World which enlightens us; as for that it hath with the heart of man, which is the Sun of the little World. Its colour is yellow, tending towards red. I will not ſtand to enquire what place affords the beſt; ſince the Artiſt ought to know how to ſeparate and free it from other Metals that are found mix'd with it either in the Mines, or

by the fraud of men; and that all *Gold* is good when 'tis alone, and ſeparated from other Metals.

We will begin with its Purification, whereof there are four ways. The firſt is, the *Cupple* with *Lead*. The ſecond, *Cementation* in a *Crucible*. The third, by *Aqua-fortis*. And the fourth, and moſt certain of all, is, the Purification by *Antimony*.

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1. *The Purification of* Gold *by the* Cupple.

TAke a good *Cupple* made of Sheep's-bones *calcin'd*, or of common Aſhes waſh'd, and deprived of their *Alkali* Salt. Put the ſame into a little Furnace, and cover it with a *Muffle* or *Tile*. Then make a fire round about, and over it, but moderate the fire in the beginning, that the *Cupple* may heat by degrees, and not crack. When 'tis become red, if you have an ounce of *Gold* to *Cupple*, put into the *Cupple* four ounces of *Lead*, leave it alone in *Fuſion* for ſome time, that the *Cupple* may imbibe ſome of it. Then put your *Gold* to it, and it will melt inſtantly amidſt the *Lead*, though otherwiſe of very difficult *Fuſion*. This done, continue the fire, and blow inceſſantly upon the matter: the *Lead* will by little and little enter like Greaſe into the pores of the *Cuppel*, (which, for this intent, is made of porous matter,)

ter,) and carry with it the other imperfect Metals mixt with the *Gold*, which will become pure within the *Cupple*, and of an high colour; except the *Gold* be mixt with ſome portion of Silver, which reſiſts the action of the *Lead* as well as the *Gold*; in which caſe you muſt have recourſe to *Aqua-fortis*, or *Antimony*.

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2. *The Purification of* Gold *by Cementation.*

REduce yonr *Gold* into plates of the thickneſs of the back of a knife, and cut them into round or ſquare pieces, ſo that they may lye flat in the *Crucible*. Then take *Cement* prepared of four ounces of powder of Brick, an ounce of *Salt-Armoniac*, an ounce of *Salt-Gemme*, and an ounce of common *Salt*; all well powdered, and mixt together, and reduc'd into a dry Paſte with a little Urine. Lay a Bed of this *Cement* in the bottom of a *Crucible*, proportionable to the matter, and ſo continue to lay Bed upon Bed, intermixt of plates and *Cement*, layer upon layer, or courſe upon courſe, (called *ſtratum ſuper ſtratum*,) till the *Crucible* be full. The firſt and laſt layer muſt always be *Cement*, to the end the plates may be involv'd and covered with it. Cover the *Crucible* with a fit covering, having an hole in the middle; and then place it thus luted in a circular fire (or *ignis rotæ*) for the ſpace of three hours,

hours, during which the hole of the cover muſt be left open, that the moiſture of the *Cement* may evaporate. After this, lute up the hole likewiſe. The fire muſt be moderate in the beginning, then augmented by degrees, and continued during 8 or 9 hours, in ſuch ſort, that the two laſt hours the *Crucible* be covered over with charcoal. Then let it cool. Opening the *Crucible*, you will find the plates diminiſht in weight, becauſe the *Cement* has corroded and deſtroyed all that was mixt with the *Gold*. Waſh theſe plates well, and having put them into a *Crucible*, make a fire of *Fuſion*, with a little *Tartar* and *Saltpeter*; and ſo you ſhall reduce them into an *Ingot*.

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3. *The Purification of* Gold *by* Aqua-fortis.

TAke one part of *Gold*, and three or four parts of refined Silver; melt them together in a *Crucible*; then pour them into a deep Copper-Veſſel full of water; and you ſhall find the *Gold* and Silver mixt in the form of ſmall grains, (which is that they call *Granulation.*) Dry the grains, put them into a *Matraſs*, and pour upon them a triple quantity of good *Aqua-fortis* made of *Saltpeter* and *Vitriol.* Place the *Matraſs* in a *Furnace* of Sand, till the *Aqua-fortis* have diſſolved all the Silver; which is known when the matter ſends forth no

no more red fumes, and the *Gold* lies in the bottom of the *Matraſs* in a black powder. Then pour off the Liquor (which contains in it all the Silver) into an earthen Veſſel full of common water; and upon the black powder of *Gold* pour a little new *Aqua-fortis*, and replace the *Matraſs* upon the hot Sand, to the end that if any Silver yet remain, it may be diſſolv'd and ſeparated this ſecond time. Pour this ſecond *Diſſolution* to the firſt, and keep them. In the mean time *edulcorate* the *Calx* of *Gold* with water, then dry it, and make it red gently in a *Crucible*. You ſhall have a powder of a very high colour, which you may reduce into an *Ingot* by melting it with a little *Borax*. The Silver diſſolv'd in the *Aqua-fortis*, and poured into the Veſſel of water, precipitates, and ſeparates it ſelf from its *Diſſolvent*, by putting a plate of Copper into it; the Spirits of the *Aqua-fortis* immediately leaving the Silver to faſten on the Copper, which they diſſolve; and during the *Diſſolution*, the Silver precipitates it ſelf. The reaſon of this is, becauſe the Copper being leſs compact, and more earthy than the Silver, is eaſily penetrated by that corroſive Spirit, which impetuouſly falling upon this morſel, as agreeable to its appetite, it quits its firſt hold, and takes up to the Copper which it laſt met with, and devours as much of it as it can retain. This blue water impregnated with Copper, muſt be pour'd off by inclination, and kept in an earthen Veſſel; 'tis called *the ſecond water*, and Chirurgeons uſe

it

it for *Cancers*, and other outward *Ulcers*. The Silver is found in the bottom. It muſt be waſh'd, dry'd, and kept (if you pleaſe) in form of a *Calx*, or elſe reduc'd into an *Ingot* in a *Crucible*, with a little Salt of *Tartar*. But if into this ſecond water, which is properly a *Solution* of Copper, you put a body more earthy and porous than Copper, as Iron is, the Copper precipitates, and the *Corroſive* Spirits of the *Aqua-fortis* faſten to the ſubſtance of Iron; which may likewiſe be precipitated by ſome Mineral more earthy and porous than Iron, as *Lapis Calaminaris* and *Zink*. Laſtly, if you pour into this Liquor charg'd with theſe Subſtances ſome of the Liquor of fix'd *Nitre*, drop by drop, this latter will deſtroy the *acidity* of the *Aqua-fortis*, and precipitate thoſe Minerals. Note, that if you evaporate and cryſtallize the Liquor, you will draw from it very good *Saltpeter*, reincorporated with its fixt Salt, from which thoſe Spirits at firſt were diſtilled.

Theſe laſt Experiments might ſeem impertinent to this Chapter of *Gold*. But our deſire to inſtruct the Curious, made us take occaſion to mention them from the Purifying of that Metal by *Aqua-fortis*. And they are not unuſeful to open the way to others more conſiderable.

4. *The*

4. *The Puriſication of* Gold *by* Antimony.

THis is the beſt way of all; for Lead carries away only the imperfect Metals, but leaves Silver join'd with *Gold*. *Cement* oftentimes leaves the *Gold* impure, and conſumes ſome part of it. *Aqua-fortis* is not always a certain trial of the pureneſs of *Gold*: for ſometimes it happens that *Gold* having been mixt with ſome ſulphureous matters, their odour involves ſome of the Silver which had been put to the *Gold*, to cleanſe it by *Aqua-fortis*, which Silver falls down, and is precipitated with the *Gold* at the parting, thereby giving ſurpriſing and ſhort joys to the unskilful, who are apt to think preſently they have found out the way to encreaſe *Gold*: but upon further examination they find their expectation deceived. On the other ſide, you may be certain, that *Gold* which hath paſt the trial by *Antimony* is throughly purged, and freed from all mixture. For nothing but *Gold* is able to reſiſt that devouring Wolf.

Take therefore an ounce of *Gold*, ſuch as the Goldſmiths uſe; put it into a *Crucible* amongſt burning-coals in a wind-Furnace, and when it is very red, put to it by little and little four ounces of good *Antimony* in powder, which will melt immediately, and at the ſame time

time devour the *Gold*, (which otherwiſe is of very difficult *Fuſion*, by reaſon of its moſt exact compoſition:) when the whole is melted like water, and the matter ſparkles, 'tis a ſign that the *Antimony* is at work upon the impurities of the *Gold*. Wherefore leave it a little upon the fire; then caſt it nimbly into an Iron-*Crucible*, which has been to that end before heated, and ſmear'd with a little Oil. When the matter is pour'd in, ſtrike the *Crucible* with the Tongs, to make the *Regulus* deſcend to the bottom. After 'tis a little cool'd, ſeparate the *Regulus* from the droſs. Weigh it, and put it to melt in a good large *Crucible*, adding to it by little and little double its weight of *Saltpeter*: then cover the *Crucible*; ſo that the coals get not into it, and giving a quick fire, the *Saltpeter* conſumes all that remain'd of the *Antimony* with the *Gold*; and the *Gold* ſettles at the bottom of a moſt beautiful colour, and pure. You may put it into a *Crucible* hot at it is, or elſe let the *Crucible* cool, and then break it to ſeparate the *Ingot* from the Salts. This manner of purifying the *Regulus* of *Gold* is not common and ordinary, but preferable before the reſt, becauſe done ſpeedily: but 'tis practiſed only in a ſmall quantity. The common faſhion is, to put the *Gold* in a flat *Crucible* upon a melting fire, and blow continually till the *Antimonial* part be exhaled. This not only requires time, but expoſes you to the hurtful exhalations of the *Antimony*, which 'tis always good to avoid.

Aurum

Aurum Fulminans.

REduce into thin plates a dram of fine *Gold*; put theſe plates into a *Matraſs*, and pour on them three drams of good *Aqua-regia*, then ſet the Matraſs upon hot Sand, till the *Gold* be diſſolv'd. Pour the *Solution* into a Veſſel wherein there is three or four ounces or more of Fountain-water; then pour to it drop by drop ſome Oil of *Tartar* made by *Deliquation* till the *Ebullition* ceaſes; which is a ſign that the *Corroſion* of the *Aqua-Regia* is deſtroyed by the Liquor of the Salt *Alkali* of *Tartar*, which, as other *Alkalies*, breaks the force of *Corroſive* Spirits, ſo that they are conſtrained to let fall to the bottom the body which they held in form of Liquor. The ſame happens here to the *Gold*: for if you let it ſettle a-while, it will precipitate it ſelf to the bottom of the water; which will ſwim above as clear as Cryſtal, and is to be pour'd off by inclination. You muſt pour warm water upon the powder, to take away all the *Acrimony* of the Salts; and when 'tis ſetled pour that water off, and put more upon it. This do ſo often, till the powder of *Gold* be well edulcorated; which is known by its being inſipid. Laſtly, put it into a Tunnel with filtring paper, through which the Liquor paſſes, and leaves behind it the

the powder of *Gold*, which muſt be dried carefully by a ſlow heat: for it eaſily takes fire, and bouncing like a Gun, flies away.

This impetuous action proceeds from the mixture of the Salts and Spirits which enter into the *Diſſolvent* and the *Precipitant* of the *Gold*, and which reduce it into atoms. Of which Salts and Spirits, the *Gold* by its reaction and its *fixity*, retains ſome portion, though imperfectly; for when the fire acts upon this mixture, it drives out the ſpirituous parts, which the *Gold* and the *Coagſcles* of Salt of *Tartar* deſire to retain; from which conflict the great noiſe enſues.

This *Fulmination* may be hindred ſeveral ways, all which tend only either to break the force of the *nitrous* Spirits, or to ſeparate them from the Salt of *Tartar*, a good quantity whereof always remains with the fulminating *Gold*. For after all the *Lotions* that can be made of it, it will be commonly found a fourth, or almoſt a third part heavier than the ſimple *Gold* which was diſſolved and precipitated. Wherefore to deſtroy the activity of this Salt, beat the fulminating *Gold* together with three times as much of flower of *Sulphur*, and put this mixture upon a ſmall fire in a *Crucible*: the *Sulphur* will burn and exhale, during which its *ſaline acid* parts faſten to the *ſaline* and ſpirituous parts which involv'd the *Gold*, and carries them away; and the *Gold* will remain in the bottom of the *Crucible*, of the ſame weight as at firſt. You may reduce it into a Metallick

Body,

body, with the addition of a little *Borax* by a fire of fuſion; or elſe you may mix the fulminating *Gold* with Oyl of *Vitriol* or *Sulphur*, or with the Spirit of *Sea-Salt*, and put them boldly in a *Crucible* upon the fire without fearing any thing; for their acid Spirits change the nature of the Salt of *Tartar*.

Some employ this Powder in diſeaſes proceeding from corruption of the Blood; for by ſweat and inſenſible tranſpiration it drives the venom from the Center. The Doſe is from 2 to 8 Grains, in ſome Conſerve, or in the Extract of *Juniper Berries*.

The Calcination of Gold by Mercury.

TAke a Dram of *Gold* purged by *Antimony*; reduce it into very thin Plates, which cut with Cizars into ſmall pieces: Then take two little *Crucibles*, which place upon burning Coals; and put your *Gold* into the one, and ſix Drams of good *Mercury* into the other. When the *Gold* is all red, and the *Mercury* begins to ſmoke, mix them together in one of the *Crucibles*, and ſtir them with a little Stick; they will preſently unite, and make a ſoft and tractable *Amalgama*, which you muſt waſh to take away the blackneſs; then dry it and paſs it through a piece of *Shammoy Leather*: The overpluſs of *Mercury*

will remain in the Leather, weighing ordinarily about four Drams; the *Gold* retaining three times its weight of *Mercury*. Now to reduce this *Gold* into a ſubtle and impalpable *Calx*, you muſt mix this with twice the weight of *Sulphur*, in a Marble-Mortar for the ſpace of two or three hours, and put this mixture into a *Crucible*, on which put a covering with a hole in the middle. Place the ſame in a moderate Fire, for fear of reducing the *Gold* into a ſolid body and looſing all your pains. The *Sulphur* and the *Mercury* will exhale; but the *Gold* will remain in the bottom of the *Crucible* in a ſpongy and impalpable Powder. You may likewiſe reverberate it under a muffle, and ſo you ſhall have a *Calx* of *Gold* well opened and fit for curious operations.

Another Calcination of Gold.

DIſſolve a Dram of *Gold* in *Aqua Regia*; poure the ſolution into a *Gourd*, wherein there is a quart of Spring Water and about ſix Drams of *Mercury*. Place the *Gourd* in a hot Sand four and twenty hours, during which the Spirits of the *Aqua Regia* will act upon a part of the *Mercury*, and let the *Gold* fall in a red light Powder to the bottom of the Veſſel; and the Water which be-

before was yellow by reaſon of the *Gold* which it contained, will become clear as *Cryſtal.* Pour it off by inclination and dry the powder of *Gold* and the *Mercury* (which could not be diſſolved in this little quantity of *Aqua Regia*, neceſſary to the diſſolution of a Dram of *Gold*, and having loſt a great part of its virtue by the mixture of the Spring Water in the *Gourd*) I ſay, dry your *Gold* and *Mercury* in a Spoon with a gentle heat; then paſs the *Mercury* through Leather, the Powder of *Gold* will remain in the Leather; beat it and Calcine it with double its weight of Flower of *Sulphur*, as is ſaid above of *Aurum Fulminans*; and you ſhall have a very ſubtil and well opened *Calx* of *Gold.*

A Diaphoretick Powder of Gold.

DIſſolve in three Drams of good *Aqua Regia* one Dram of fine *Gold*, and when it is diſſolved add to it one Dram of well refined *Salt-peter*, which diſſolve alſo in it. In this Liquor moiſten ſome ſmall pieces of very fine Linnen, and till all the Liquor be imbibed by them. Dry them with the gentle heat of Sand; then ſet them on fire with a little ſpark of fire, which they take as eaſily as Tinder; and they will be reduced into

Aſhes of a dark red; which being cold, ſweep up carefully with a Hare's Foot or a Feather, and keep it for uſe.

This *Gold* cleanſeth the Maſs of Blood by Sweat and inſenſible Tranſpiration. It alſo cures continual and intermitting Feavers, taken in the beginning of the Fits. The Doſe is from four to twelve Grains, in ſome conſerve, in form of a *Bolus*, or in a little Wine, or a ſpoonful of Broth.

This Powder hath been in ſome hands as a great ſecret; and they have told wonders of it to the credulous, who are eaſily taken with the leaſt things. If you rub *Silver* with this Powder moiſtned with a little Water, it guilds it very well and this guilding is of long continuance.

CHAP. II.

Of Silver.

Silver is a Metal leſs fixed, leſs weighty, and leſs perfect than *Gold*, though much more ſo than all other Metals, and paſſes for a perfect Metal, becauſe it comes near the perfection of *Gold*.

'Tis called *Luna* from its colour, and from the great Remedies it affords for the diſeaſes of

of the Brain, which by ſympathy eaſily receives the impreſſions of the *Moon*. *Silver* is found naturally in Mines, impure, or elſe is mixt by Men with other Metals; and therefore it muſt be purified before it be employed for Medicinal Preparations. The purification of it is either *Superficial* or *Total*. In order to the firſt take common *Water*, common *Salt*, and *Tartar*, mix them, and in this mixture boil the *Silver* which hath ſome little *Copper* in it. But a more powerful way of purifying is neceſſary to open the cloſe body of it, and get out every other imperfect Metal. The Goldſmiths uſe this boiling for the whitening of Plate, in which there is always ſome ſmall portion of *Copper*; and this cannot be done without ſome little loſs of weight, becauſe the boiling always diſſolves ſome ſmall portion of *Copper* upon the Surface. To purify *Silver* totally you muſt have recourſe to the *Cupple*, which ſpares no Metal but *Gold* and *Silver*; which remain fixt in the middle, after all the other Metals are diſſipated.

The Purification of Silver *by the* Cupple.

THis operation differs not from the purifying of *Gold* by the *Cupple*. For the *Lead* carries away all other Metals, reducing

them either into Droſs or Smoak; only *Gold* and *Silver* reſiſt it. Place a good *Cupple* with its Muffle in a little Furnace made for this purpoſe, the Figure of which is in the third Table. In defect of ſuch a Furnace, place the Muffle in a Wind-Furnace: put fire round about, and over it; which muſt be gentle in the beginning, that the *Cupple* may heat by degrees, otherwiſe it will crack. When it is all red by encreaſing the Fire by little and little; put firſt into it an equal quantity of *Lead*, and let it melt and boil, to the end the *Cupple* may begin to imbibe it. Then put in alſo the *Silver*, which eaſily melts in the *Lead*. Continue the Fire till the *Lead* be exhaled and have carried away with it the impure Metals wherewith the *Silver* was mixed before: Then the *Silver* will be ſeen coagulated, and remaining alone very pure upon the *Cupple*

Vitriol of Luna.

TAke an ounce of Cuppled *Silver* reduced into little grains, or thin Plates and three ounces of Spirit of *Nitre*. Put them together into a *Matrace* upon hot Sand, and leave then ſo till the *Silver* be diſſolved; pour the warm Solution into a little *Gourd* or *Cupping-Glaſs*, warm'd a little before, leſt the

the heat of the Solution break it. Leave it to cool ſome hours, and the Liquor will turn almoſt all into *Cryſtals*, but ſome will remain not Cryſtallized this firſt time. Therefore evaporate half away upon Sand in a Glaſs veſſel, amd leave it to Cryſtallize in the cold. Or if you be contented with the firſt *Cryſtals*, pour the floating Liquor into an earthen Pan, wherein there is water and a piece of *Copper*; ſo all the *Silver* contained in the Liquor will fall down in Powder, which you may waſh and dry, and then melt with a little *Saltpeter*, and *Tartar* in a little *Crucible*, to reſtore it its firſt Body. Thoſe firſt *Cryſtals* muſt be dried by a gentle Fire, and kept very carefully in a Glaſs Veſſel well ſtop'd. They are called the *Salt* or *Vitriol* of *Luna*, and are of a very bitter taſt. They are uſed chiefly for diſeaſes of the *Brain*, or for *Dropſies*: They purge kindly enough. The Doſe is from three to eight Grains in a Glaſs of Liquor proper to the Diſeaſe, for ſuch as can bear their bitterneſs; or elſe in ſome Conſerve, drinking after it ſome appropriated Liquor, to temper the *Acrimony* left in theſe *Cryſtals* by the *Spirit* of *Nitre*.

A Tincture of Luna.

REduce an ounce of Cuppled *Silver* into ſmal Grains, Plates, or Filings, which diſſolve in three ounces of good *Aqua Fortis*, made of *Saltpeter* and *Vitriol*. The Solution pour into *Salt-water* or *Sea-water* well filtred and clear; and the *Silver* will immediately be precipitated in a white Powder, which you muſt let ſettle together in the bottom. Then pour off the Liquor by inclination, and inſtead thereof pour on ſome very clear Spring-water warm; ſtir the *Silver* about in it; then let it ſettle again, and pour off this Water likewiſe by inclination. Repeat this waſhing till the Powder of *Silver* be free from all *Acrimony*. Then dry it gently, and put it into a fit *Matrace*, adding to it half an ounce of the *volatile Salt* of *Urine*, and twelve ounces of Spirit of *Wine* well Tartarized, *i. e.* well rectified upon Salt of *Tartar*. Put upon this *Matrace* another *Matrace*, whoſe mouth muſt enter into that which contains the matter to make a Veſſel called *Bocia centra bociam*, or *Double bolts head*; lute the joynts exactly with a wet Bladder. Digeſt the matter in a very gentle heat of a vaporous Bath of Horſe-dung for ten days; in which time the *Menſtruum* will extract the *Tincture* of *Silver* and

and become of a Sky-colour. Pour off the *Tincture* by inclination, filtre it, and put it into a little *Glaſs-Gourd* with its head; which Lute well together, and place in a vaporous *Bath*; and having drawn off three parts by Diſtillation, the *Tincture* will remain in the bottom, which you muſt keep carefully in a *Viol* well ſtopt.

This *Tincture* is uſed with good ſucceſs in *Epilepſies*, *Apoplexies*, *Frenzies*, and other Diſeaſes of the *Brain*, in ſome convenient Liquor. The Doſe is from four to fifteen drops.

After you have drawn this *Tincture*, you find in the bottom of the *Matrace* a *Calx* of *Silver*, which may be reduced into a body by the following mixture. Take an ounce of powdered *Pibbles*, an ounce of *Tartar*, two drams of powdered *Charcoal*, and four ounces of good *Saltpeter*. Put this mixture by little and little into a *Cruſible* heated red hot in the Fire, and it will ſoon melt with great agitation; which being over, pour this melted Salt into a hot Mortar and there let it cool; you ſhall have a hard maſs, of which take a weight equal to your *Calx* of *Silver*; powder them together, and melt them in a good *Cruſible*, and the *Calx* will be reduced into a body, being otherwiſe hardly reducible, by reaſon of the *Sea-Salt* wherewith it was precipitated, and of the *volatile* Salt of *Urine*, with which it was digeſted. For theſe two Salts make the *Silver* very *volatile*. And if you

you ſhould go about to melt the ſaid *Calx*, without this mixture of fixt Salt, which deſtroys the impreſſion of the volatile Salts, it would fly almoſt all away through the violence of the fire of *Fuſion*.

Lapis Infernalis, or a Perpetual Cauſtic.

TAke two ounces of Cuppled *Silver*; reduced either into Granules, Plates, or Filings; diſſolve it in a *Matrace* with its double or triple of good *Aqua-fortis*; pour the *Solution* into a *Gourd* covered with its *Alimbeck*, or rather into a little Porrenger of ſtrong earth not vernifht, and open; evaporate it in in Sand till it come to a yellow Salt, and place it in a fire of Sand, and draw off about half the *Aqua-fortis*. The Water which comes off will be very weak becauſe the *Silver* retains the ſtronger Spirits of the *Aqua-fortis*. Leave the Veſſel ſome hours to cool, and you ſhall find the matter remaining in the bottom of the *Gourd* in form of a Salt, which put into a good *German Cruſible* ſomewhat large, becauſe the matter ſwells at firſt in boiling, and would be apt to run over and be loſt. Set the *Cruſible* upon a little fire, till the *Ebullitions* be paſſed, and the matter be fallen to the bottom; about which time augment the fire a little, and you ſhall ſee the

the matter like Oil in the bottom of the *Cruſible*. Pour it into a very clean Caſting-mould a little heated before, and you ſhall find it as hard as Stone; keep it in a Box for uſe. But for greater convenience, to the end the Surgeon may have pieces of ſeveral ſizes to employ in hollow Ulcers, of the bigneſs of the Tag of a Point, or other Figure according to occaſion cut the matter before it be quite cold, and leave it in ſuch figures as you think fit.

It may be uſed for *Cancers*, and to eat and conſume the ſuperfluous ſpongy Fleſh of *Ulcers* only by touching them. And if a *Gangreen* be not deep this Medicine will reach to the ſound parts; after which you need only leave Nature to her ſelf, employing ordinary Remedies to produce new fleſh, and *Cicatriſe* the diſeaſed part.

The daily uſe of the ſaid Remedy will diſcover, will ſhew its excellency in ſundry other Diſeaſes. 'Tis prudence in a Surgeon to uſe oftentimes the ſame *Medicament* for different Maladies, when the *Indications* concur. This Stone is very commodious and laſts very long. 'Tis called *Infernalis*, partly from its black colour, and partly from its *Cauſtic* burning quality.

Obſerve, that the virtue of this Stone proceeds from the *Corroſive Salts* of the *Aqua-fortis* which the *Silver* congeals and retains. You may make the like Stone of *Copper* or *Iron* the ſame way, ſaving that *Iron* and *Copper*

per reduced into this condition attract the Air more powerfully, and diſſolve into Liquor: which happens not to this of *Silver*? for it preſerves it ſelf always in a ſolid form, and may be carried about in a Box; for which reaſon Surgeons prefer it before others, and make uſe of it.

Many Authors fill their Books with ſeveral *Tinctures* and other preparations of *Gold* and *Silver*; which we omit as either uſeleſs or hurtful, perſiſting in our firſt deſign, to ſet down nothing ſuperfluous, or that may fruitleſly puzzle the Reader, but to communicate to the publick all that is profitable, and that may be underſtood and eaſily performed by Artiſts, yea even by ſuch as have no skill but what they derive from their Writings.

CHAP. III.

Of Lead, *or* Saturn.

LEad is an imperfect Metal, conſiſting naturally of an impure Salt, and undigeſted *Mercury*, and a *Terreſtrial Sulphur*, which abounds in this body, for which reaſon it eaſily unites with the Oils of Vegetables, and the Fats of Animals, which are Sulphureous. It eaſily deſtroys all other imperfect Metals, and in

in the fire reduces them into Droſs by the devouring *Sulphur* predominant in it. The *Chymiſts* call it *Saturn*, from its ſympathy with that Planet; and though it be of a very courſe and impure compoſition, yet it affords good Medicines both internal and external.

Tis to be obſerved that *Lead* in it ſelf without having paſſed through the Artiſt's hands is a Metal friendly to Man, and cauſes no prejudice by it ſelf through any malignant quality either within or without. For we ſee perſons every day, who being ſhot, keep the Bullets in their Bodies without any inconvenience; and Plates made of *Lead* being applied outwardly ſoften the hardneſs of Nerves and Tendons, and take away divers external Tumors, which would not eaſily yield to other Remedies.

The Purification of Lead.

BEfore you can imploy *Lead*, 'tis neceſſary firſt to purify it as much as its imperfection admits, in order to extract out of it what is profitable. Melt it in a great Iron-ſpoon, then put to it by degrees ſome ſmall pieces of *Wax* or *Soot*, which pieces preſently flame and leave a little Scum upon the *Lead*, which muſt be taken off with an *Iron Spatula*.

Caſt

Caſt new little pieces of *Soot* or *Wax* and take away the Scum in this manner, till the *Lead* remain as bright as a Looking-glaſs; then pour it into a Baſin, and let it cool.

The Calcination of Lead.

PUT *Lead* thus purified into a Glaſs not Verniſht, and ſet the ſame in a Wind-Furnace amidſt the burning Coals. Yet the Fire muſt not be violent; but 'tis enough that the Pot be red, and the *Lead* melted. Stir it continually with an Iron rod till it be turned into Powder, or a grayiſh *Calx*, inclining to green; which let cool, and then by ſifting ſeparate its impurities.

Another Calcination of Lead.

LAY ſome purified *Lead* upon a Tile that reſiſts the Fire, and hath edges to keep the melted *Lead* from running into the Fire. Place the Tile in a Reverberatory Fire, ſo that the flame may beat continually upon the *Lead*. But the Fire muſt not be too violent; for then it will remain always melted, or elſe Vitrifie; to prevent which, the Fire muſt be

be moderate, and the *Lead* muſt be ſtirred continually with an Iron-rod; ſo the *Lead* will firſt turn to a gray Powder ſomewhat greeniſh, and by continuing the motion it will become yellow, and at laſt red, at which time 'tis called *Minium*. The *Calx* of a Pound of *Lead* will be found encreaſed above two ounces, by reaſon of the Particles of Fire incorporated with it, and by their activity reducing it into very ſubtle parts. This augmentation is alſo obſerved in the *Calcination* of *Tin* and other imperfect Metals.

Lead is reduced into Droſs, which is a ſort of *Calcination*, in great *Cupples*, near the Mines, or in Mint-houſes, when they purifie *Gold* and *Silver* by *Lead*, which deſtroys the imperfect Metals mixt with the perfect, and reduces them into Droſs; which is called *Litharge* of *Gold* when it is drawn from the Cuppling of *Gold*, and *Litharge* of *Silver* when it is ſo drawn from *Silver*; and imploy'd for the purifying of theſe Metals.

Another Calcination of Lead.

TAke a Pound of *Lead* purified as above; melt it in an Earthen Pot not Verniſht, that reſiſts the Fire, Then caſt into it half a pound of *Sulphur* groſly powdered, and ſtir it all together with an Iron-rod, till the

Sulphur

Sulphur ceaſe to flame and be conſumed; and then you ſhall find the *Lead* in the bottom of the Pot in a black powder which is called *Plumbum Uſtum*, or *Burnt Lead.*

Another Calcination of Lead.

LEad is alſo *calcined* by *acid* vapors, and by this means reduced into a white *Calx*. The proceſs is as follows. Hang Plates of *Lead* in a covered Veſſel, into the bottom of which there is ſome *Vinegar*; place the Veſſel upon ſome gentle heat, or in Horſe-dung; and the ſteams of the *Vinegar* will corrode the *Lead-plates*, and cauſe to come out of them a white Powder, like Flower, which gather off with a *Hare's-Foot*; and put the Plates again into the Veſſel till they be all reduced into *Ceruſe*. You may make uſe of any of theſe *Calx*'s for the preparations which are to be made upon *Lead*; but the grayiſh powder mentioned firſt is the moſt convenient of all.

Salt or Sugar of Saturn.

TAke a pound of grayiſh powder of *Lead*, put it into a great *Matrace*, and pour upon it three pounds of diſtilled *Vinegar*. Set the *Matrace* in digeſtion in a *Sand-Furnace* during the ſpace of twenty four hours, in which you muſt ſhake the *Matrace* now and then; otherwiſe the *Calx* will harden in the bottom of the Veſſel and endanger to break it. Then pour off the diſtilled *Vinegar* by inclination into another Veſſel; you will find it charged with the ſubſtance of the *Lead*, and its acidity turned to a great ſweetneſs. Put new diſtilled *Vinegar* upon the *Lead*, and proceed as before, mixing and keeping all the *Solutions*. Continue to put new *Vinegar*, to digeſt, and to pour off by inclination, till the diſtilled *Vinegar* diſſolve no more *Lead*, nor become ſweet, or till all the *Lead* be diſſolved, which it will not fail to be, provided the *Calx* of *Lead* be well made. Then filtre all the *Solutions* through gray Paper, and put them into a *Gourd* with its *Alembick*, and *Recipient* in *Balneo Mariæ*; and you ſhall firſt draw off an inſipid Water, the diſſolved *Lead* retaining all the *acid* Spirits of the *Vinegar*, which incorporate with it and make a very white Criſtalline Salt like Needles, reſembling

Saltpeter refined. This Liquor muſt not be diſtilled to *ſiccity*; but you muſt obſerve this proportion, that if you have diſſolved a pound of *Lead* there muſt remain about four pounds of Liquor in the *Gourd*, to the end the Salt may Chriſtallize. For when the Liquor is too clear, the Salt is too much diffuſed in it, and will not Chriſtallize; and being too much deprived of moiſture, the whole turns to a confuſed Maſs.

Wherefore then take the *Gourd* out of the *Bath*, and ſet it in a cool place, during three or four days, at the end of which you ſhall find a good part of the Liquor turned into Salt. Separate the floating Liquor, and dry the Salt between two Papers. Afterwards put the Liquor which you had poured off by inclination, into a leſs *Gourd*, and diſtill off about a third part; then ſet the *Gourd* a day or two in a cool place, and you ſhall again find Cryſtallized Salt, which you ſhall dry as the firſt. Evaporate and Criſtallize again the remaining Liquor, and reiterate the ſame operation, till you have reduced into *Criſtals* all that is ſo reducible. And in caſe your Salt be not white enough the firſt time, diſſolve it with the Phlegm of *Vinegar*, which filtre through gray Paper, and Criſtallize as before; you ſhall thereby have a very fair Salt of *Saturn*. This Salt is a very good Medicine in the *Aſthma*, and other diſeaſes of the Breaſt, being given in ſome Pectoral Decoction. The Doſe is from five

to

to fifteen grains. 'Tis alſo uſed outwardly with good ſucceſs in Wounds, and Ulcers; for it kills and deſtroys the corroding Salts of them; it is likewiſe excellent for Inflammations, being diſſolved in *Night-ſhade* water, or ſome other appropriate Water, and then applied. Moreover it ſerves well in *Lotions* for Inflammations and Itchings of the Eyes. But it is ſuſpected inwardly for thoſe that have weakneſs in the Kidnies, and parts neceſſary to Generation. And therefore in this caſe it muſt be uſed diſcreetly, and with great circumſpection.

The Magiſtery of Lead.

DIſſolve the *Calx* of *Lead* in *Vinegar*, Diſtilled as is taught in in the preceding *Chapter*. Pour off the *Solution* by Inclination, and paſs it through gray Paper. Then put upon it ſome Oil of *Tartar*, *per deliquium*, and you will inſtantly ſee the Liquor as white as curdled Milk, whereon pour a good deal of common Water very clean; and let it ſettle, and the *Lead* will precipitate to the bottom in a white powder; and this is by reaſon of the Oyl of *Tartar*, which being an *Alkali* Salt diſſolved, breaks the force of the diſtilled *Vinegar*, which had reduced the *Lead* into Liquor, and conſtrains it to let go

its former hold. Pour off the floating Liquor by inclination, and put ſome common Water upon the Powder, to *Dulcify* it, which pour away when it is well ſettled. Repeat this waſhing ſo often till the Powder be wholly freed from the *Acrimony* of the Salts. Then dry it and keep it for uſe.

This *Magiſtery* is exceeding white, and good for *Pomatums*. But 'tis alſo uſed in *Unguents* and *Eye-Waters* as a good *Diſiccative*.

If out of curioſity you deſire to reduce the *Salt*, or *Magiſtery* of *Saturn* into *Lead* as it was before; melt a little Salt of *Tartar* in a *Cruſible*, then put thereto a little of this *Salt* or *Magiſtery*, and you ſhall ſee it preſently return to *Lead*; for the *acid* Spirit of *Vinegar*, which kept the *Lead* in the form of a Salt or white Powder, is deſtroyed by the *Salt* of *Tartar*, by which it is at the ſame time both melted and reduced back to Metal.

A burning Spirit of Saturn, *(as it is called) but rather, A Spirit of the Volatile Salt of* Vinegar.

TAke two pound of *Salt* of *Saturn*, well purified by ſeveral *Solutions* and *Cryſtallizations* with diſtilled *Vinegar*. Put it into

a

a *Retort*, ſo as to fill the ſame but half way, and place it in a *Furnace* of Sand, fitting thereunto a large *Receiver*. Lute the joynings well, and make the Fire gentle at firſt. There will come forth in the firſt place a phlegmatick Water and afterwards the Spirit, which will cauſe the reſemblance of Veins in the *Receiver*, as when you diſtill *Aqua-vitæ*: for this Spirit is almoſt of the ſame nature, proceeding from the *Volatile Salt* of the diſtilled *Vinegar*, which the *Lead* fixt and retained in its diſſolution. But when this Spirit is urged by the Fire, it forſakes the body whereunto it adhered. Encreaſe the Fire by little and little and continue it to make the *Retort* red. There will come forth a red earthy Oil towards the end, but in very little quantity; which Oil ſome account the true *Red Oil of Saturn*, but erroneouſly, it being nothing elſe but the more heavy and earthy part of the diſtilled *Vinegar*. The Diſtillation being ended leave the Veſſels to cool: then unlute the *Receiver*, wherein are the Phlegm, the Spirit and the Oil confuſedly together, and there remains a black earth in the *Retort*. You muſt rectify what is in the *Receiver*, in a little *Gourd* in *Balneo Mariæ*: The Spirit will come forth firſt, which is inflammable like that of Wine, but it will ſmell like the Spirit of *Lavendar* or *Roſemary*: The Phlegm and the thick Oily Liquor will remain in the bottom of the *Gourd*. This Spirit is an excellent Remedy

againſt the *Plague*, *Putrid Feavors*, and *Hypochondriacal Melancholy*. The Doſe from 4 to 12 drops in ſome convenient Liquor. The Phlegm may ſerve to waſh Wounds and *fœtid Ulcers*. The Earth left in the *Retort*, is very black whilſt incloſed; but as ſoon as you have broken the *Retort*, and it takes Air, it grows hot of it ſelf and turns from black to yellow, and at the ſame time is rarified to the eye. If you put it into a *Cruſible* to melt, it returns eaſily to *Lead*.

CHAP. IV.

Of Tin.

TIN is an imperfect Metal by reaſon of the unequal compoſition of its principles; for it abounds with *Sulphur* and Earth. It contains a *Mercury* pure enough, but in little quantity, as alſo very little Salt, which is the cauſe that 'tis eaſy to deſtroy its Metallick form, and reduce it to an irreducible *Calx*. 'Tis called *Jupiter*, by reaſon of the affinity it hath with the *Jupiter* of the great World, and for that the Remedies made of it ſerve the for the Diſeaſes of *Liver* and the *Matrix*.

The

The Purification of Tin.

FIne *Tin* is purified after the ſame manner as *Lead*, in a great Iron Diſh, by being melted on the Fire, and adding to it ſome little pieces of Soot or Wax, and taking off with a *Rod* or *Spatula* of Iron, the black Scum that riſes upon it, and pouring the *Tin* thus depurated into a very clean Baſon.

The Calcination of Tin.

TIN is *Calcined* in a *Reverberatory* Fire upon an edged Tile, as *Lead* is in the foregoing *Chapter*. Continual agitation will reduce it by little and little into a powder of an *Iſabella* colour, provided the *Tin* be fine and not mixed with *Lead*; if there be *Lead* amongſt it, the *Calx* will be white: and 'tis this laſt that the makers of fine Earthen Pots make uſe of for their Verniſh. It may alſo be *Calcin'd* by the addition of *Sulphur*, as we have ſaid in the foregoing *Chapter*.

The Salt of Jupiter.

MAny Chymiſts reſume to affirm in their writings that the preparation of the *Salt* of *Tin* differs nothing from that of *Lead*, and that they are to be made after the ſame manner. We eaſily underſtand from hence, and from ſeveral other things contained in their Books, that they borrow one from another, and chooſe rather to offer to the publick unwarranted preparations, than to make experience thereof themſelves. For 'tis impoſſible to diſſolve the *Calx* of *Tin*, though very well Reverberated, in Diſtilled *Vinegar*, which nevertheleſs eaſily diſſolves *Lead*. 'Tis true, the moſt corroſive *Acids* as *Aqua-fortis*, Spirit of *Nitre*, *&c.* diſſolve it. But in as much as a great quantity of them is neceſſary for a little *Tin*; the Remedies drawn from it by help of thoſe *Corroſives*, cannot but be very hurtful. But if you reduce *Tin* into Flowers by *Sublimation*, then it is ſo opened, that Diſtilled *Vinegar* can eaſily diſſolve it.

Take a pound of fine *Tin*, either in *Calx* or Filings, and two pounds of well refined *Saltpeter*, and put them into a *Gourd* made of good earth that is able to reſiſt the fire. Place the *Gourd* in a *Reverberatory Furnace*, ſtop well and lute the upper part of the *Furnace*

nace round about the *Gourd*, all but the four *Regiſters*, by which the fire is to be governed. Fit upon the *Gourd* one over another three or four good Earthen Pots, pierced in the bottom, all but the uppermoſt which is to cloſe all; that which is next the *Gourd* muſt beſides have a little opening on one ſide for putting the matter in. Lute the joynings of the Veſſels exactly, and put fire to the *Furnace* to heat the *Gourd* by degrees, till it become all red; then with a little Iron Ladle put in about an ounce of the Powder, and ſtop the hole immediately with a piece of Earth or Brick fit to it, which may be eaſily removed. It will make a great rumbling noiſe, in which the Volatile Spirits of *Saltpeter* carry away with them part of the *Tin*, which is ſublim'd and ſticks to the Pots like white Flower. When the noiſe is over, put in another ounce of the mixture, ſtopping the hole ſpeedily, and let the noiſe paſs. Continue this till all the Powder be ſpent, and then let the Veſſels cool. After which, unlute them and you will find the Pots filled with the Flowers of *Tin*, like Meal. Gather off theſe Flowers with a Feather, and waſh them well with warm water, to take away the *Acrimony* of the *Saltpeter*; continue theſe waſhings till the Flowers be well *edulcorated*, and then dry them by a gentle fire.

Theſe Flowers thus dry'd put into a *Matrace*, pouring thereupon diſtiiled *Vinegar* three fingers

fingers higher than the matter. Set this *Matrace* on hot Sand to digeſt for three days, then pour off the *Solution* by inclinarion into another Veſſel, and put new diſtilled *Vinegar* upon the remaining matter in the *Matrace*, and ſet the ſame again to digeſt as before; then pour off the *Menſtruum* by inclination. Repeat theſe Digeſtions with new *Vinegar* till the Flowers be all diſſolved; then filtre all the *Solutions* together, and evaporate them with a gentle heate to *ſiccity*, and in the bottom of the Veſſel you ſhall find the *Salt* of *Jupiter*: which in the next place muſt be freed from the *acidity* of the *Vinegar* it retains, by means of the Spirit of *Wine* in the manner following.

Put the Salt into a little *Glaſs-Gourd*, pouring thereupon good Spirit of Wine two fingers high; fit an *Alembick* to the Gourd, and a little *Receiver* to the *Alembick*, and ſet it to diſtil with a ſlow fire; the Spirit will carry off with it part of the *acid Salt* of the diſtilled *Vinegar*. Repeat this Diſtillation five or ſix times, always with new Spirit of Wine; and you ſhall have a *Salt of Jupiter* deprived of all *Acrimony*, and endued with very great virtues in all *Hyſterical* Diſeaſes. The Doſe is from 6 to 20 grains in ſome convenient liquor.

The Magiſtery of Jupiter.

DIſſolve four ounces of very fine *Tin* with thrice as much good Spirit of *Nitre* in a *Matrace* upon a fire of Sand. Pour the *Solution* into a great Glaſed Earthen Pan full of very clean Water, which by its quantity will weakeu the Spirit of *Nitre*, and make it forſake the *Tin* which it had diſſolved, and which will precipitate to the bottom of the Veſſel in a very white Powder. *Edulcorate* this Powder by frequent waſhings with Water, and dry it in the ſhade; 'tis a very fair white, and ſerves for *Pomatums* for the Face.

CHAP. V.

Of Iron.

IRon, called *Mars* by the Chymiſts, is an imperfect Metal, containing very little *Mercury* but much fixt Salt and *Terreſtrial Sulphur*. It affords very excellent Remedies which produce admirable effects in many Diſeaſes

eaſes, ſo that even the enemies of Chymiſtry are obliged to make uſe of it and to confeſs its Virtues when other Remedies fail of the effects deſired.

The Purification of Iron.

Iron is purified and becomes *Steel* by means of the Horns and Hoofs of Animals, either cut ſmall or groſly Powdered and mixt with *Charcoal* of ſome light Wood, as Willow or Tegle powdered and ſtratified with ſmall *Iron* Rods, in Pots or *Furnaces* made on purpoſe. And being the Hoofs and Horns of Animals contain much Volatile Salt in them, this Salt by the help of the Fire penetrates the ſubſtance of *Iron* by its ſubtlety and reduces it into *Steel.*

The Calcination of Mars, *and reduction into an aſtringent* Crocus *or* Safron.

TAke the filings of poliſht *Steel*, or thoſe of fine Needles; put the ſame upon a large flat Tile, which place in a Glaſs *Furnace*, or elſe in a *Reverberatory Furnace*, during ſeven or eight days, ſo that the Flame may touch it

it continually; and the filings will be turned into an impalpable Powder, Spungeous and of a browniſh red. Waſh the ſame five or ſix times with warm water, to take away what might remain of its *aperitive* virtue: then dry it and keep it for uſe. This Powder, called *Crocus Martis aſtringens*, is uſed for *Dyſenteries, Lienteries,* Spitting of Blood, *Gonorrhœa's*, and other Diſeaſes that need binding. The Doſe is from 10 to 30 Grains, in Conſerve of Roſes, or Syrup of Quinces, or in ſome proper Water or Decoction. Note that the Chymiſts give the name of *Crocus*, or *Safron*, to Metals or Minerals, which by Fire either Actual or Potential are reduced into a red or reddiſh Powder.

Another Aſtringent Safron of Mars

TAke three ounces of Filings of *Steel*, put it into a *Glaſs-Gourd*, and pour thereto by little and little twelve ounces of Spirit of *Nitre*, or of good *Aqua-fortis*. I ſay by little and little, by reaſon of the great *Ebullition* which ariſes, and when this is paſſed, clap an *Alembick* upon the *Gourd*, and draw off all the Humidity, which will be as inſipid as Water, by reaſon that the *Steel* retains all the *acid* Spirits. There will remain in the bottom of the *Gourd* a reddiſh Maſs, which you

you muſt put into a *Criſible* upon a moderate fire, ſo as to make it red for three hours; and you ſhall have a very red Powder, to be employed outwardly for ſtoppage of Bleedings, and for drying of Wounds and Ulcers. This *Crocus* is alſo uſed in *Aſtringent Plaiſters*, *Unguents*, and *Liniments*. But if you put but one ounce of Filings of *Steel* to ſix ounces of *Aqua-fortis*, and in the *Matrace* evaporate the ſame to *ſiccity* in a fire of Sand, you ſhall have a *Crocus* diſſolvable in a Cellar into a red Liquor. 'Tis a very good Remedy for *Mundifying* any *Ulcer*, rendering the ſame capable of *cicatriſation*, which it procures by the Aſtringent faculty derived to it from its *Vitriolick* Earth.

Another Aperitive Safron of Mars.

HEat a ſquare piece of *Steel* in a Smith's Forge till it become very white and ſparkle; have ready a large Earthen Pan full of Water, and take the *Steel* out of the Fire, holding it firm with the Tongs over the ſaid Water, and apply to it the end of a roll of *Brimſton*, and they will both melt drop by drop into the Water; but the *Steel* will ceaſe when it begins to loſe its whiteneſs; and then you muſt put it again into the Forge and repeat the application of the *Sulphur* till all

all the *Steel* be melted and fallen drop by drop into the Pan of water. Pour the water out of the ſame by inclination, and put the *Steel* and *Sulphur* thus melted into a *Cruſible*, which which being made red hot upon the Fire, the *Sulphur* will exhale and the *Steel* will remain, which you muſt beat to Powder and ſift through a Hair Sive. Afterwards reverberate this Powder with a flaming Fire four and twenty hours, and you ſhall have an Aperitive *Safron* of *Mars*, of a red colour, and a great Remedy in *Cronick* diſeaſes, the *Cachexie*, Obſtructions of the *Liver*, *Spleen*, and *Meſentery*. The Doſe is from 8 to 24 Grains, in the Conſerve of *Marigold*, *Tamariſe*, *&c.* Many uſe with good ſucceſs the Filings alone finely powdered.

Vitriol of Mars.

TAke three pounds of good corroſive Spirit of *Vitriol*, called improperly Oil, and nine pounds of Rain-water. Mix them together; then put a pound of Filings of *Steel* in a great *Matrace*, and pour thereon by little and little the three quarters of the mixture of Water and Spirit. Set the Veſſel upon hot Sand for two days, during which, moſt of the Filings will be diſſolved, which would

would not be without the addition of the Water, which hinders the Oil of *Vitriol* from being ſuckt up and congeal'd by the Filings of *Steel*; and the Liquor will become green. Pour it off by inclination into another Veſſel; and if any Filings remain undiſſolved, put therenpon that which you reſerved of the Diſſolvent, and digeſt the ſame as before upon hot Sand. Then pour off what is clear by inclination into the firſt *Solution*, and throw away what remains in the bottom of the *Matrace*, as uſeleſs Earth, being but little. Filtre all the *Solutions*, and Evaporate them in an Earthen Pan upon hot Sand to the half. Then place it in a Cellar or other cool place for three days, in which time moſt of the Liquor will be Chriſtallized like *Vitriol*. Pour off the floating Liquor into another Veſſel, and having evaporated part of it, Chriſtallize the reſt as before. Repeat this Cryſtallization till all the humidity be evaporated, and all the ſolid ſubſtance be reduced into *Vitriol*. Then dry all the *Cryſtals* and keep them in a Glaſs, or Earthen Pot well ſtopt. One pound of *Mars* affords uſually four pounds of *Vitriol*; which increaſe proceeds from *Recorporification* of the Spirit of *Vitriol*, joyning it ſelf eaſily with the *Mars*, which is very apt to congeal and detain *acids* by its *ſtyptick* virtue. The *Vitriol* of *Mars* is good againſt the *Cachexie*, and the obſtructions of the *Liver*, *Spleen*, *Pancreas*, and *Meſentery*. But the uſe of it muſt be continued for ſome time

time, as of other Remedies extracted from *Mars*; whereof the Doſe likewiſe muſt be encreaſed in the continuance, and that by little and little till the Stomach riſes againſt in, and then it muſt be diminiſht. The Doſe is from ʒ to 15 Grains in Broth, or in ſome Conſerve in form of a *Bolus*. With this *Vitriol* may be made alſo Mineral-waters, ſtrong or weak, according to the intention. But commonly a Dram of *Vitriol* ſerves for two quarts of Water.

Another Aperitive Safron of Mars.

REduce a ſquare piece of fine *Steel* into ſmall Plates, which ſtrow upon an Earthen Diſh well Glaſed, and expoſe the ſame early in the morning to the Dew in the Month of *May*, taking care to turn it now and then till the Dew be paſſed that day, and till the Plates in the Baſon be dried by the Sun, or otherwiſe; then with a Hare's Foot carefully ſweep together the little Powder which will be upon the Plates like ruſt. Continue the ſame Operation with like care the whole Month of *May*, or as long as the Dew laſts, daily gathering off the Powder, and keeping it for uſe. This Operation is ſufficiently long and Tedious; but this *Safron* yields not to the firſt in its opening virtue, which is much encreaſed by the ſubtle and penetrating Spi-

rit of the Dew, which unites it ſelf with the *Steel*, and inſenſibly reduces the ſame into an impalpable Powder. The Doſe of this *Crocus* is from 4 to 15 Grains in Obſtructions, as the other Remedies extracted from *Mars*, to which it is not inferior in virtue.

Another Aperitive Safron of Mars.

TAke a pound (or as much as you pleaſe) of *Vitriol* of *Mars* made with Spirit of *Vitriol*, as we have taught before: put the ſame into a *Crucible* amongſt burning Coals for half an hour, or till it be quite red; then let the Veſſel cool, and you ſhall find a reddiſh brown Powder, weighing about half the *Vitriol* put to *Calcine*; for the lighter and better Spirits exhale by the action of the Fire, which 'tis good to preſerve; as you ſhall do by putting the *Vitriol* of *Mars* into a Glaſs-*Retort* well luted in a Reverberatory Fire, joyning thereto a great receiver, and proceeding in the ſame manner as we ſhall in the *Chapter* of *Vitriol* teach the Diſtillation of its Spirit. By this means you ſhall have a very excellent Spirit of *Vitriol* of *Mars*, which may be uſed with very good ſucceſs where there is occaſion for *acids*. In the bottom of the *Retort* there will remain a

Safron

Safron of *Mars* very fair and excellent, having all the virtues attributed above to the preparations of *Aperitive Safrons* of *Mars*.

An Aperitive Tincture of Mars *by means of* Tartar.

THe preparation of this Remedy is very ſimple and eaſy. 'Tis improperly called a *Tincture*, being nothing but a *Solution* of the intire ſubſtance of *Iron* made with *Tartar*, which is a matter much abounding in *Acid* Salt. Take half a pound of Filings of *Steel*, well waſhed, and two pounds of good *Tartar* of *Montpellier*, or *Germany*, (which is beſt for this Operation) though either may ſerve, provided it be clean and Cryſtalline. Powder the *Tartar*, and mix it with the Filings, and put all together into a great *Iron*-Pot. Pour thereon ten or twelve quarts of Rain-water or River-water. The Pot muſt be ſo great that a third part may be empty. Set it to boil on a good Fire, till it diſſolve the *Tartar*, and make the *Acid* part thereof act upon the *Steel*, which you may obſerve by the ſwelling of the matter; for which reaſon the Pot muſt be very large and only half full; for otherwiſe it would run over. Continue the Fire a whole day together, and keep a Veſſel full of boiling Water near the Pot to recruit

the conſuming Water. In the mean time ſtir the Water continually, which will appear as white as Broth; and after ten or twelve hours boiling, leave it to ſettle; that which is thick will go to the bottom, and the thinner part will float above, being blackiſh and of a ſweetiſh taſt. Pour the clear off by inclination, and filtre it through a gray Paper. Then evaporate it in an Earthen Veſſel with a gentle Fire to the conſiſtence of Syrup, and keep it in a Phial for uſe, as a very good and ſure Remedy againſt all obſtructions of the *Liver*, *Spleen*, *Pancreas*, and *Meſentery*, and againſt *Cachexies*, *Dropſies*, Stopping of the Courſes, and generally againſt all Diſeaſes which require opening and ſtrengthening; 'tis alſo very good againſt the Worms and putrifaction of the Stomach and Bowels. The Doſe is from fifteen drops to half a Spoonful in in Broth, or in ſome proper Water or Decoction.

An Aperitive Extract of Mars.

TAke one pound of very fine Filings of *Steel*, put it into a great Bottle, and pour to it eight quarts of *Muſt* or juice of Grapes newly preſſed out; ſtop the Bottle and expoſe it to the Sun, and in fair weather forty days and nights, ſhaking the matter in it

it ſometimes, the better to draw out the *Aperitive* ſubſtance of the *Steel*. At the end of which time filtre the Liquor through gray Paper, which you will find to have the colour and taſt of *Iron*. Evaporate it to the Conſiſtence a *Rob*, if you will have it in a liquid form, or to the conſiſtence of an *Extract*; if you will mix it with *Electuaries*, *Lozenges*, or *Pills*. Let this be done with a gentle Fire in a Glaſs Veſſel in *Balneo Mariæ*, or warm Aſhes, to the end the *Extract* may not ſavour of burning, and you ſhall have a Medicine of great virtue, and not at all unpleaſant. If you keep it in the conſiſtence of a *Rob*, the Doſe may be the ſame with the *Tincture* of *Mars* newly deſcribed. If you reduce it into an *Extract*, the Doſe may be from ſix Grains to a Scruple, in ſome proper Syrup, Trosk, a roſted Apple, or the like you may alſo incorporate it with an equal quantity of *Aloes Succatrine*, diſſolved, depurated and boiled with Syrup of *Damask-Roſes*, and according to art make a Maſs of it, whereof you may form Pills, each weighing eight Grains, of good uſe for all ſorts of Obſtructions both of Men and Women. 'Tis enough to take one Pill before Supper for fifteen days, or three weeks. Some reinforce this Maſs with *Gum Armoniac* or *Sagapenum*, and even with *Scammony* and other *Laxatives*; which I will not diſaprove, being glad that every day ſomething were invented to improve the excellent Medicines which Chymiſtry affords us.

An Aſtringent Extract of Mars.

THough this Preparation be very ſimple and the eaſieſt in all the Book, yet it deſerves to be mentioned for the good effects which it produces, and for the ſake of thoſe that are ignorant of both ſort of *Pharmacy*. Take four ounces of Filings of *Steel*, put it into a Glaſed Earthen Pot, pouring thereto a quart of good deep red Wine, that which Wine-Merchants uſe to give a colour to their White-wine, ſet itto boil, and ſtir it about with an *Iron Spatula* till above three parts of the Wine be conſumed; Filtre the remainder whilſt it is hot and ſwims above the *Steel*; and then evaporate it to the Conſiſtence of an *Extract*; Or if you will not be at the trouble, you may uſe this filtred Liquor, giving an ounce of it in Broth, faſting, for ſome mornings together, as a great Remedy for *Diarrheas*, *Dyſenteries*, old *Hepatical Fluxes*, and other ſuch Diſeaſes. Being reduced into the form of an *Extract*; The Doſe is from twelve Grains to half a Dram, in ſome Broth or other *Aſtringent* Liquor.

Salt of Mars.

TAke half a pound of Filings of *Steel*, put it into a Glaſed Earthen Pan and ſprinkle it with good Diſtilled *Vinegar* till it be like Paſt. Then ſet the Veſſel in a *Bath* of Aſhes till the Paſt be dried; then powder it, and moiſten it again with Diſtilled *Vinegar* and dry it as before. Repeat this operation a Dozen times, to open the *Steel* well; Laſtly, powder the *Steel*, and put it in a *Gourd*, in *Balneo Mariæ*, pouring thereto twelve pound of diſtilled *Vinegar*, and continue it in the Bath boiling till a third part of the *Menſtruum* be conſumed; then decreaſe the Fire, and when the Veſſel is cold pour off the *Solution* by inclination into ſome Bottle, and having put new *Menſtruum* to the *Steel* ſet the ſame in *Balneo* as before, ſtirring the matter now and then, till a third part of the *Menſtruum* be conſumed as before; pour off the remainder by inclination. Repeat this Operation thrice; and the Veſſel being cooled mix all the *Solutions* together, and filtre them very exactly. Evaporate in *Balneo Mariæ* till there remain in the bottom but about an eighth part; then ſet the Veſſel in a cool place for a day or two, in which time the Salt will partly be Cryſtallized. Pour off by inclination the Li-

quor floating above the Cryſtals into another glaſed Veſſel, and Evaporate again. Repeat this Operation till you have drawn out all the Salt, which you muſt dry gently and keep for uſe. This Salt is improperly called ſo, as well as that of *Saturn*, being nothing but *Solutions* made with the *Acid* Spirit of *Vinegar* which coagulates with the matter diſſolved into the form of Salt; but this union may be eaſily diſſolved by Fire, which drives the light Spirits of the *Vinegar* into the Air, the Metallick bodies remaining in form of an Earthy *Calx*, till by the extreme violence of a melting Fire the ſame be reduced into Metal.

Yet this hinders not but that whilſt in the form of Salt they have their uſe in Phyſick; ſince the *Acids* wherewith they are prepared carry them into the moſt remote and difficult places; and theſe very *Acids* being corrected in ſome ſort by the bodies which they retain, cannot act with ſo much violence as they would do being alone. This Salt may be uſed where ever there is occaſion for the other *Aperitive* Remedies of *Mars*. The Doſe is from 3 to 15 Grains in ſome *Vehicle*.

CHAP.

CHAP. VI.

Of Copper.

Copper is an imperfect Metal, conſiſting of a little Salt and *Mercury*, but of very much red and earthy *Sulphur*; nevertheleſs it is purer than *Iron*, and contains leſs Earth and little Salt; whence it may eaſily be mixt with *Gold* and *Silver* without rendring them brittle, whereas the leaſt mixture of other Metals makes them ſo brittle that they are not malleable. The Chymiſts call it *Venus*, both by reaſon of the influences which poſſibly it receives from that Planet, and of the virtue it hath in Diſeaſes ſeated in the parts of Generation. It affords not ſo many internal Remedies as *Iron*, by reaſon of its Vomiting quality, which is hardly corrected. But it yields more powerful ones than *Mars* for external Maladies. Wherefore we may well ſuſpect the uſe of a Water lately cried up, whoſe virtue proceeds only from a fixt Salt of *Venus*, which being given in ſubſtance fails not to ſhew what it is by cauſing vomiting. And the uſe of the Water impregnated with this Salt, produces thoſe nauſeatings and inclinations to Vomit by irritating, cor-

corroding, and weakening the coats of the Veſſels to ſuch a degree that being incapable to retain the more ſubtle parts of the Blood it hath cauſed the death of many Patients under pretext of curing them of the *Dropſy* and other like Diſeaſes.

The Purification of Copper.

TAke thin *Copper* Plates, and cut them into pieces proportionable to the *Cruſible*, then make a courſe Powder of three parts of *Pumice-ſtone*, and one part of *Sandiver*, or Salt of Glaſs: Stratify your Plates in a very ſtrong *Cruſible*, beginning and ending with the Powder, and ſet the *Cruſible* in a very hot melting Fire. The *Copper* will be found melted in the bottom of the *Cruſible*, and the *Pumice-ſtone* will be above it, having ſuckt up a good part of its earthly and impure *Sulphur*. This operation may be repeated twice or thrice, to purify the *Copper* the more and render it fitter for Chymical Operation.

The Calcination of Copper.

Copper may be *Calcined* into a *Crocus* in the ſame manner as *Mars*, by reducing it into Filings, and placing the ſame upon an edged Tile in a Reverberatory Fire during ſeven or eight days. It may alſo be *Calcin'd* by Stratifying the Plates with powder of *Brimſtone* in a Pot that can endure the fire, covered with its covering, in the middle of which there is a hole to let the *Sulphur* exhale. *Copper* thus burnt is called *Æs uſtum.* It may alſo be *Calcin'd* and reduced into *Verdigreaſe* by Stratifying the Plates in a covered Pot with the Husks, or Mother of the preſſing of Grapes which have fermented with the Wine in the Fat; in the bottom of which Pot there muſt be a little Wine, over which little ſticks are to be placed croſswiſe to keep the Plates from touching the Wine. The ſaid Mother is alſo to be moiſtened a little before you Stratify the Plates with it; which render their *Verdigreaſe* after that the Mother being Fermented and heated, the *Vinous Tartar* remaining in the Mother being excited by the vapours of the Wine, become volatilized into Spirit, and as it aſcends penetrates and corrodes the the Plates, and reduces them into *Verdigreaſe*. This preparation cannot

not be made in all places where Wine grows; becauſe all Wines have not *Tartar* enough for this purpoſe. But *Montpelier* and other adjacent places afford much of it, becauſe the Wines thereof abound with very pure penetrating *Tartar* proper for this effect.

Vitriol of Venus.

TAke a pound of the Filings of *Copper*, put the ſame into a *Matrace*, and pour thereon three pounds of good Diſtilled *Vinegar*. Place it in digeſtion upon hot Sand for three or four days; then pour off the diſtilled *Vinegar* by inclination, and put ſome freſh upon the *Copper*, which digeſt as before. Repeat this by pouring off the *Solutions* by inclination till all the Filings be reduced into a green Liquor. Filtre it, and Evaporate the *Humidity* till there remain but about four pounds of Liquor. Then take the Veſſel from the Fire, and let it ſtand two or three days in a cool place, and part of the Liquor will be Cryſtallized. Pour off as much as is not Cryſtallized, and having Evaporated the half, ſet it again to Cryſtallize as before. Continue this till all the diſſolved ſubſtance be reduced into green Cryſtals, which you muſt dry and keep carefully. This Operation is made more eaſily with *Verdigreaſe*, becauſe the diſtilled

Vinegar

Vinegar finds the ſame more open and fit for Diſſolution than crude *Copper*.

Another Vitriol of Venus.

A *Vitriol* of *Venus* of a sky colour may be prepared by means of the *Acid* Spirit of *Vitriol*, in the ſame manner as the *Vitriol* of *Mars* is made.

Spirit of Venus.

TAke a pound of the green Cryſtals of *Copper* or *Verdigreaſe* made with diſtilled *Vinegar*, put the ſame into a *Glaſs-Retort*, which place in a *Furnace* of Sand, fitting a a great *Receiver* thereto. Lute the joints well, and make a moderate fire in the beginning. There will come forth firſt a Phlegmatick Water, next a Spirit, appearing in the *Receiver* in the form of Veins, as *Aqua vitæ* alſo doth; then you muſt encreaſe the fire, to drive out the white Spirits which will aſcend in Clouds: at laſt a yellowiſh Liquor will come forth. The Diſtillation being ended, leave the Veſſels to cool; and when they are unluted you will find in the *Retort* a black Earth

Earth like Coal-duſt, which you may keep in Powder, being very *Styptick*, and good to dry Wounds and Ulcers; it may alſo be reduced into *Copper* by a Fire of Fuſion, only adding ſome *Salt-peter* and *Tartar* to it. What is in the *Receiver* muſt be put in a little *Gourd*, and ſet in hot Sand with its Head and Receiver; and all the Liquor diſtilled to driness with a gentle heat. You will have a very clear Spirit, excellent againſt all obſtructions of the *Liver* and *Spleen*; as alſo againſt the *Epilepſy*, *Apoplexie*, and old pains of the Head; 'tis put into *Julips* to give them a pleaſing Sharpneſs. It may alſo ſerve for the diſſolving of *Corals*, *Pearls*, *&c.* but being diſtilled *Vinegar* doth the ſame, I would not adviſe any body to make uſe of a Spirit ſo laboriouſly made. And though ſome pretend that this Spirit acts upon Bodies without re-action, and may be drawn off by Diſtillation with the ſame ſtrength it had before; yet I know the contrary by experience, having found that this Spirit as well as diſtilled *Vinegar* leaves the impreſſion of its *Acrimony* in Bodies diſſolved by it, whether *Pearls* or *Corals*; for which reaſon I cannot ſubſcribe to all the commendations which they give to it.

A Volatile Vitriol and Magiſtery of Venus

TAke four ounces of Filings of *Copper*, put it into a *Matraſs*, and pour thereon ſome *Acid* Spirit of *Salt Armoniac* prepared as is taught hereafter, to the height of three Inches above the *Copper*; ſtop the *Matrace* and ſet it in digeſtion upon hot Sand for ſome days. The Spirit will diſſolve part of the *Copper*, but not with that violence as *Aqua-fortis* doth, but by little and little; (for *Aqua-fortis* will do as much in one hour as this Spirit can do in four days.) Pour off the *Solution* by inclination into another Veſſel; and if any *Copper* remain undiſſolved, put new Spirit to it till it be all diſſolved. Filtre all theſe *Solutions*, and evaporate the half in a covered *Gourd* upon hot Sand; ſet the remainder in a cool place to Cryſtallize for two days. Pour off the Liquor that ſwims above the Cryſtals into another *Gourd*, and Evaporate the half again, and ſet the reſt in a cool place to Cryſtallize. Continue this till all be cryſtallized. Dry the Cryſtals gently and keep them carefully. This *Vitriol* hath ſomething myſterious in it, and the preparation of it is the firſt ſtep to come to the knowldg of the ſweet *Sulphur* of *Venus* which *Van Helmont* recommends above all other things. If you

ſet

ſet this *Vitriol* in a *Cruſible* upon burning Coals, it all flies away. You may make an excellent Medicine of it by ſubliming it with *Salt Armoniac*, as follows. Reduce four ounces of *Vitriol* and as much of *Salt Armoniac* into a fine Powder, which put into a *Gourd* with its *Alembick*, well Luted, and fit to it a *Receiver* well luted alſo; and by a fire of Sand ſublime by degrees all that will aſcend; after which let the Veſſel cool, and having diſſolved that which is ſublimated in warm Water, filtre it, then pour upon it ſome Oil of *Tartar per deliquium*, which will precipitate a greeniſh Powder, which is the *Magiſtery* of *Venus*, and muſt be *edulcorated* by frequent Ablutions, and then dried. 'Tis a Soveraign Remedy for an old *Gonorrhea*, being taken for ſome days from 6 to 12 Grains in ſome Conſerve in form of a *Bolus*. You may keep apart a little Urinous Spirit found in the *Receiver*, which may be imployed outwardly for Aches proceeding from from cold humours.

A Liquor of Venus.

DIſſolve an ounce of Filings of *Copper* in eight ounces of good *Aqua-fortis*, and evaporate the *Humidity* by little and little in a fire of Sand, till there remain in the bottom of the Veſſel a green Maſs, which being

being kept in a Sellar for ſome days will melt into a Liquor, and is uſeful to cleanſe Ulcers and eate off dead fleſh, and all Superfluities.

CHAP. VII.

Of Quickſilver.

Quick-ſilver is a Mineral body fluid, heavy and ſhining, conſiſting of a ſubtle Sulphureous Earth, and a Metallick Water of the ſame ſubtelty, both ſtrongly linked and united together. 'Tis called *Mercury* from its conformity in its Actions with the *Celeſtial Mercury*, which frequently mixes its influences with thoſe of other Planets, and according to its different Conjunction produces different Effects: ſo our *Mercury* eaſily joyns with other Metals, and diverſifies its effects according to the quality which it gives or receives from the Metallick Bodies and Mineral Spirits with which it is joyned. Not but that alone and without being joyned with others it can produce even ſurprizing effects, as may be ſeen in its preparations. Nevertheleſs there muſt be much diſcretion and prudence in the uſe of it; and there is oft-times raſhneſs in thoſe that employ it, as well through the

little knowledg they have of the Nature of a body which varies it ſelf after a thouſand ſeveral manners, as in regard of the different complexions and tempers of the Sick and of the Diſeaſe in which it is uſed very frequently, and perhaps more often than need requires.

Quick-ſilver is found fluid in many places, being driven up by the Central heat to the ſurface of the Earth; and ſo it is found near *Cracovia* in *Poland*, but ordinarily we find it in ſundry places involved in a Mineral earth, from which it is ſeparated by diſtillation in *Iron-Retorts*, as I have ſeen in a Mine of *Quick-ſilver* near a Village as you go from *Gorits* a Town of *Sclavoniat* to *Lubiana* the Capital City of *Carniola*. It is ſo plentiful that uſually twelve pounds of the Mineral Earth which is grayiſh, yield upon melting in the *Iron-Retort* above four pounds of *Quick-ſilver*. There are alſo found in *Hungary* and *Tranſilvania* Mines of *Mercury* which are reddiſh and have ſome mixture of *Solar Sulphur*; for which reaſon the *Mercury* coming from thoſe places is eſteemed better than that which partakes not of *Gold*. But ſince *Mercury* paſſes through many hands before it comes to us, and ſo may be ſophiſticated, beſides what *Heterogeneous* mixture it may have in the Mine, it is fit that it be well purified before it be employ'd upon the Body of Man.

The Purification of Mercury.

THere are ſeveral Purifications of *Mercury*. Some are contented only to waſh it with good *Vinegar* and *Salt* and when it is dry to paſs it through Leather. But being it may carry with it *Lead* or *Biſmuth*, or ſome other Mineral, wherewith poſſibly 'tis mixt, this way of purifying is not ſufficient. Others put the *Mercury* into a *Retort* and diſtill it into a *Receiver* half full of Water; and if it has been encreaſed by *Lead* or *Biſmuth*, theſe Metals will remain in the bottom of the *Retort* whilſt the *Mercury* goes pure into the *Receiver*. But the beſt way of purifying *Mercury*, and the fitteſt for all Chymical Operations, is to revive *Cinabar* into fluid *Mercury*; by which means you are ſure to have pure *Mercury* as it comes from the firſt hand; becauſe all *Cinabar* is made near the Mines of *Mercury*, and is put into that form for more eaſy tranſportation. Moreover the mixture of the *Mercury* with *Sulphur*, by means of which *Cinabar* is made, and its ſublimination doth in ſome ſort graduate and perfect it. Laſtly the the Reviving of *Cinabar* into fluid *Mercury* by Filings of Iron delivers it from all impurity. But ſince we reſolve to uſe the fluid *Mercury* revived from *Ci-*

nabar, 'tis requiſite firſt to ſhew the preparation of Artificial *Cinabar*.

The Sublimation of Mercury *into* Cinabar, *and the reviving of* Cinabar *into fluid* Mercury.

MElt a pound of common *Sulphur* in a wide Earthen Pan; then put three pounds of *Mercury* into a Shamoy skin, and gently ſqueez the ſame through it, ſo that it come out by little and little like ſmall Rain, and fall immediately into the Pan which contains the melted *Sulphur*. In the mean time continue ſtirring the *Sulphur* and keep it in Fuſion till the *Mercury* be inſenſibly incorporated with it, then let the matter cool, which will be black; powder it groſly and ſublime it in an *Aludel*, or Earthen Subliming Pot with a cloſe Fire; and you ſhall have a very fair *Cinabar*. If the *Mercury* were ſophiſticated with *Lead*, *Biſmuth*, or any thing elſe, you will find the ſame in the bottom of the Subliming Veſſel; ſo that you may be aſſured of the goodneſs and pureneſs of this *Mercury* converted into *Cinabar*. The ordidinary uſe of *Cinabar* is for Painting, as alſo in *Fumigations* to provoke *Salivation* in the *POX*; 'tis likewiſe uſed in *Ointmemts* for the *Itch*, and other faults of the Skin.

Now

Now to revive *Cinabar* into fluid *Mercury*; Take a pound of this *Cinabar*, or of that which is ſold in the Shops, and as much of Filings of *Iron*, beat them together, and put the mixture into a *Retort* of Glaſs or or Earth well Luted; place this *Retort* in a *Furnace*, and put Coals round about it till it be quite covered; then put lighted Coals above, ſo that the Fire may kindle by degrees; fit a *Receiver* to the *Retort* half full of Water. And when the *Retort* begins to be red, the *Mercury* will come into the *Receiver* drop by drop. Encreaſe the Fire, and continue it till there come no more forth. Having poured away the Water, dry the *Mercury* and keep it for uſe. The Filings of *Iron* remaining in the *Retort* will be much Rarified, and black and encreaſed in weight, becauſe it retains all the *Sulphur* which was in compoſition of the *Cinabar*; which *Sulphur* leaves the *Mercury* to adhere to the *Iron*, by reaſon of the *Acid* Spirits contained in the *Sulphur* which are united to the *Iron*.

Red Precipitate,

PUT four ounces of this *Mercury* revived from *Cinabar* into a *Matrace*, and pour thereunto ſix ounces of good *Aqua-fortis*. Place the *Matrace* in warm Sand till all the

Mercury be diſſolved; which is uſually done in a quarter of an hour; then pour off the *Solution* into a *Retort*, and diſtill in a fire of Sand all that will come forth. *Cohobate* the Diſtillation twice, and at the end of the ſecond *Cohobation* encreaſe the fire till the *Retort* be red hot; then leave the Veſſel to cool, and breaking it you ſhall find in it a red ſhining Maſs, which you muſt powder in a Marble Mortar. This *Precipitate* is of uſe for *Venereal* Diſeaſes; ſome take it at the Mouth from 4 to 8 Grains in Pills, or in ſome Conſerve in form of a *Bolus*. 'Tis alſo uſed with ſucceſs in *Pomatums* for the *Itch*, *Tetters*, and other faults of the Skin; in which caſe you muſt take notice that the *Aqua-fortis* be not made but of *Salt-peter* and *Alum*, becauſe that with *Vitriol* is too violent and corroſive. It alſo ſerves for *Ulcers* and *Cancers* as well to mundify as to conſume their proud fleſh and other ſuperfluities. But as for the internal uſe, you muſt leſſen its corroſiveneſs by putting it into an Earthen Diſh, and pouring on it good Spirit of Wine, and burning the ſame; which muſt be repeated thrice, and then you may uſe it inwardly with more ſafety.

Here I muſt admoniſh the Surgeons and others who buy *Precipitate* of certain vagrant perſons, that they try it by putting a little upon burning Coals; for if any of it revive into fluid *Mercury* as ſoon as it feels the Fire, 'tis a ſign it is mixt and ſophiſticated with

with *Minium*, which is nothing elſe but *Calcin'd Lead* which retains the Spirit of *Aqua-fortis* which before kept the *Mercury* in form of a red Powder; ſo that the *Mercury* re-aſſumes its firſt form; which, true red *Precipitate* doth not; for being put upon a burning Coal, it all exhales preſently; the corroſive Spirits and the *Mercury* being ſtrictly united and having no ſuch body as *Lead* to divide them, they exhale together in the Fire.

Turbith Mineral.

TAke four ounces of *Mercury* revived from *Cinabar*, and ſixteen ounces of Oil of *Sulphur* or *Vitriol*; put them together into a *Glaſs-Retort*, which ſet in hot Sand for twenty four hours; after which, fit a *Receiver* to it and encreaſe the Fire by degrees; much Phlegm will come forth firſt, becauſe the body of the *Mercury* retains back the *acid* Spirits of the *Vitriol* or *Sulphur*; continue the Fire till there come forth at laſt a little of *Acid* Spirit which the *Mercury* could not withold. Then let the Veſſels cool, and you will find in the bottom of the *Retort* a white Maſs, which beat in a Glaſs Mortar, and pour on it a good deal of hot Water, upon which it will inſtantly turn yellow. *Edulcorate* it well

well with warm Water, and then dry it and keep it. This Powder purges powerfully upwards or downwards, being mixt with purgative Pills or Electuaries. 'Tis employed for the cure of Venereal Diſeaſes. The Doſe is from 3 to 6 Grains.

The violence of this Powder may be moderated by burning Spirit of Wine upon it and ſtirring it in the mean time; and this for ſix times together. Which done, you may uſe it with more ſafety, and augment the Doſe to 8 or 9 Grains.

White Precipitate.

DIſſolve eight ounces of the ſame *Mercury* in a great *Matrace* with ten or twelve ounces of good *Aqua-fortis*, upon hot Sand: and being diſſolved pour upon it four or five times as much warm Water to break the ſtrength of the corroſive Spirits; add to it afterwards about eight ounces of Sea-Salt well purified, and you ſhall ſee the *Mercury* fall to the bottom in a white Powder. Let it ſettle well, and pour the Liquor into another Veſſel. Then waſh and *Edulcorate* the *Precipitate* with warm water till all the *Acrimony* of the Salts and the Spirits be taken from it; then dry it in the Shadow. Drop gently ſome Oil of *Tartar per deliquium* upon the

the firſt *Lotion* kept apart, and it will *Precipitate* part of the *Mercury* which the common Salt could not, and you will find in the bottom of the Veſſel a red Powder which alſo waſh and *Edulcorate*, as the white. You may alſo reſerve the firſt *Lotion*, and drop into it gently Spirit of Urin, which will *Precipitate* ſome of the *Mercury* in a grayiſh Powder. Thus you may have from one ſort of *Solution* three ſorts of *Precipitate*, which may be indifferently uſed in *Pomatums* for the *Itch*, *Morphew*, *Tetters*, *&c.* Where 'tis to be noted that you muſt never uſe it for the Face, at leaſt not long, becauſe it will ſpoil the Teeth and weaken the Brain, the Nerves, and Membranes in their ſource and Original, and it has been obſerved to cauſe Deafneſs in ſome perſons, of which no other cauſe could be conjectured but the applying ſuch Remedies to the Face, but the firſt *Precipitate* made with common Salt may be taken at the Mouth for Venereal Diſeaſes, it purges both upwards and downwards. The Doſe is from 4 to 8 Grains. If you put this white *Precipitate* into a *Matrace* and ſublime it without any addition in Sand, you ſhall have an excellent ſweet Sublimate, of which you may give from 20 to 30 Grains in ſome Maſs of *Pills*, without fear of Vomiting; for the Sublimation alone corrects its violent quality.

Coroſive

Coroſive Sublimate.

DIſſolve in a *Matrace* a pound of *Mercury* with a pound of good *Aqua-fortis* upon a moderate Fire of Sand. Pour off the *Solution* into an *Alembick*, and Diſtill off about half the *Humidity*, which you may throw away. Let the reſt cool, and it will coagulate into a Salt or *Vitriol.* Mix this *Vitriol* of *Mercury* with one pound of *decrepitated Salt*, and as much of *dephlegm'd Vitriol*, both powdered; put this mixture into a Glaſs *Gourd* with its Head, and place it in a *Furnace* of Sand, adapting to it a *Receiver.* Diſtill with a very gentle Fire all the Phlegm that will come out; then encreaſe the Fire one degree, to make the *Mercury* aſcend by little and little; it will unite with ſo much of the Spirit of *Salt* or *Vitriol* as is neceſſary for *Cryſtallization* and *Coagulation*; and you will ſee it ſtick to the ſides of the *Gourd.* Continue the Fire twelve or fifteen hours, always in a moderate Degree. For if the heat be not ſufficient, there will be no *Sublimination*; but if it be too great, either the Veſſels will fly, or the *Sublimate* will melt and fall back upon the *Faces.* Let the Veſſels cool afterwards, and you will find the *Mercury* Sublim'd to the top of the *Gourd*, which

which muſt be broken, to ſeparate that which is fair and Cryſtallin from the *Caput Mortuum* in the bottom, and from that which is in the Head.

You may *Sublime Mercury* without diſſolving it firſt in *Aqua-fortis*, by beating it with double its weight of dry'd *Vitriol* and as much *Decrepitated Salt*. But being there needs much time to beat the *Mercury* before it be incorporated with the Powders, and the *Atoms* or Steems iſſuing from it are hurtfull to the Brain, we prefer the manner already deſcribed.

The Sublimation of Mercurius dulcis.

BEat a pound of *Corroſive Sublimate* prepared as above in a Mortar of Marble or Glaſs, with a Wooden Peſtle, and mix it with eight or ten ounces of *Mercury* revived from *Cinabar*, ſtirring it ſo long till the *Mercury* appear not at all, and the mixture become gray; put this Powder into a Vial ſo as to fill it half; place this Vial in a *Sand-Furnace*, and give Fire by degrees for ſeven or eight hours. Afterwards let the Sand cool, take out the Vial and break it, and you ſhall find in the bottom a little quantity of light Earth, but above and in the middle the ſweet *Sublimed Mercury*, and towards the

the neck of the Vial ſome little of *Corroſive Mercury*, which you muſt ſeparate. The *Sublimate* of the middle will be compact and ſweet enough, but it muſt be beaten again in a Marble Mortar, and reſublim'd alone twice more, ſeparating the Earth from it each time, and that which is Sublimed in the top of the Vial. Keep the *Sublimate* which you fine in the middle, which will be well dulcified and fit for all uſes. The Doſe of this *Mercurius dulcis* is from 6 Grains to 30. 'Tis to be mixt with ſome Purgatives in a *Bolus* or *Pills*; but is never given alone, to avoid *Salivation*. Its uſe is chiefly againſt Venereal Diſeaſes and Worms.

Obſerve that all the preparations of *Mercury* may be revived in like manner as *Cinabar* with Filings of *Iron* or Quick *Lime*, which attract to themſelves and retain all the Spirits which fixed the *Mercury* and gave it ſeveral ſhapes. Alſo that in the preparations of *Mercury* as well Corroſive as ſweet, you muſt beware of touching any Metal, leaſt the Corroſive Salts attract the colour, and take away its whiteneſs.

CHAP.

CHAP. VIII.

Of Antimony.

Antimony is a Mineral body near approaching to the nature of Metal, conſiſting of two ſorts of *Sulphur*, the one very pure, fixt, and little different from the qualities of *Solar Sulphur*; the other combuſtible, like common *Sulphur*. It alſo conſiſts of much Metallick, Fuliginous and indigeſted *Mercury*, but more concocted and ſolid than common *Mercury*, and of a very little courſe and Salt Earth. It comes from divers places both of *France* and *Germany*: The beſt hath long ſhining veins, between blew and reddiſh. Having well choſen it, you muſt ſeparate it from its combuſtible *Sulphur*, which hinders the activity of the Remedies extracted from it; for which purpoſe ſeveral courſes have been practiſed, of which we ſhall chuſe only thoſe that are abſolutely neceſſary for the uſe of Phyſick, rejecting ſuch as are ſuperfluous, which ſerve chiefly to conſume Coals and break Veſſels.

The

The Ordinary Regulus *of* Antimony.

TAke a pound of good *Antimony*, twelve ounces of *Tartar* of *Montpelier*, and five ounces of *Nitre*; put them together in powder; then ſet a great *Cruſible* in a *Wind-Furnace* upon a little Tile, that it touch not the Grate, and that it may receive more heat; make it red hot amongſt the burning Coals, and get a Cover fit to the *Cruſible*. Take about an ounce of the ſaid mixture with an Iron Spoon, put the ſame into the *Cruſible*; and cover it at the ſame time with its Cover. The *Antimony* will be preſently *Calcin'd* with a great noiſe, which they call *detonation*; which being paſſed, put more matter into the *Cruſible*, covering it as before. Continue this till all the Matter be in the *Cruſible*; Then give a good Fire of Fuſion; and the Matter being melted put it into an *Iron Cornet* or *Cone* greaſed within, and at the ſame time ſtrike the *Cone* with the Tongs to make the *Regulus* fall to the bottom; when 'tis throughly cold turn up the *Cone*, and you ſhall find a lump of *Regulus* in the bottom and the *Fæces* on the top of it. Separate the *Regulus* with the ſtroke of a Hammer, and keep it by it ſelf; as alſo the *Fæces*, of which you may make the Golden

Sulphur

Sulphur of *Antimony*, by boiling the ſame in common Water, and filtring the Decoction, upon which pouring a little diſtilled *Vinegar* by degrees, you ſhall ſee a red *Sulphur* of *Antimony Precipitate*, which you muſt *Edulcorate* by ſeveral *Lotions*, and then dry it. Many call this Powder *Sulphur Aureum Diaphoreticum*; but improperly; for 'tis a ſtrong Vomitive. The Doſe is in ſubſtance from 2 to 6 Grains. It may be alſo infuſdd in Wine, as *Crocus Metallorum* is, to make an *Emetic* Wine.

Regulus of Antimony *with* Mars.

TAke half a pound of the points of Horſ-nails, put them into a good *Cruſible*; in a Wind-*Furnace*, and cover the *Cruſible*; give a Fire of Fuſion, as ſoon as the Nails are very red, put to them a pound of good *Antimony* groſly powdered, and clap on the Cover, laying Coals above it, that the Fire may be very violent, and the *Antimony* preſently melted ſo as to act upon the Iron and reduce it into Droſs, with which the impure Sulphureous part of the *Antimony* unites at the ſame time that the *Mercurial* and pure part ſeparates from it. You muſt have an *Iron Cornet*, or *Cone* upon the Fire, and rub it with Wax and Oil; and when you ſee the

the matter well melted, throw into it by little and little three or four ounces of *Salt-peter*: I ſay by little and little, leſt the *Nitre* make the Matter boil out of the *Cruſible*. When the Matter has done ſparkling, put it into the heated *Cone*, which ſtrike with the Tongs to make the *Regulus* fall to the bottom. When it is cold, take it out of the *Retort* and ſeparate it from the *Fæces* with the blow of an Hammer. Theſe *Fæces* are nothing but the Sulphureous and Earthy part of the *Antimony* mixt with the *Nitre* and ſome part of *Mars*, making a Maſs together; which at firſt is very compact; but in a few days it rarifies it ſelf into a very light Powder reſembling the Droſs of *Iron*. The *Regulus* will not be pure enough at the firſt fuſion, and therefore it muſt be melted in a new *Cruſible*, and being melted put to it three ounces of crude *Antimony* in Powder, and make them flow together with a quick Fire. This addition of *Antimony* conſumes the remaining impreſſions of *Mars* by its *Sulphur*. The matter being well in Fuſion, caſt in by little and little two or three ounces of *Nitre*; and the *Ebullition* being ceaſed, pour it all into a hot and Oil'd *Cone* or *Cornet*. and proceed as before, and you ſhall find the *Regulus* much purer than at the firſt melting. Melt it once more, and add to it a little *Salt-peter*; and when the *Ebullition* is over, put it into a *Retort*, proceeding as before; and the *Fæces* will be grayiſh. Reiterate

rate the Fuſion the fourth time; adding to it ſome more *Salt-peter*; and you will ſee that the ſaid *Salt-peter* finding no more impurity in the *Regulus*, the *Fæces* lying at the top will be white or yellowiſh; and beſides the *Regulus* will have upon its Surface the figure of a Star, which is the true ſign of its perfection.

You may uſe either *Regulus* to make *Cups* and *Bullets*, or *Pills* which they call *Perpetual Pills*, becauſe their virtue is never exhauſted. For Wine put into a Cup made of *Regulus*, and changed every day, will always Purge and Vomit; and a little Bullet of *Regulus* may be ſwallowed againſt the *Colick* and the *Iliack Paſſion*; and when 'tis paſſed with the excrements, it may be waſhed and ſerve again a thouſand times, never loſing its quality, ſubſtance, or weight, but always working by the ſame irradiative quality.

The Flowers of Antimony.

PLace an *Aludel* or other Earthen Pot reſiſting the Fire in a *Wind-Furnace*, and fit above it four or five of the ſame earthen Pots proportionate to the ſaid *Aludel*, and open both at the ſtop and bottom, except the uppermoſt which muſt ſerve for a Head.

Lute the joynings well, and let the Pot placed upon the *Aludel*, have a hole on the ſide with a ſtopple of the ſame Earth, to be put to and removed eaſily. Give Fire by little and little, and encreaſe it till the *Aludel* be all red. Then throw into the hole about two or three Drams of good *Antimony* in powder, ſtopping the hole immediately; open the ſame again about half a quarter of an hour after to put in the like quantity of powder of *Antimony*. Continue this Operation till you have put enough in. In the mean time maintain the Fire ſo that the *Aludel* may remain always red hot; and when you have employ'd *Antimony* enough, let the Veſſels cool and unlute them: gather off the Flowers ſticking to the ſides of the upper Veſſels, which will be of ſeveral colours, according as your Fire has been more or leſs violent. In the *Aludel* you will find ſome part of the *Antimony*; though ſome affirm that all the *Antimony* aſcends up in Flowers; but experience ſhews the contrary; and the total *Sublimation* thereof can only be made in open, not in cloſe, Veſſels.

Another

Another preparation of Flowers *of* Antimony *with* Salt-peter.

REduce into fine pouder one pound of *Antimony* and three pownds of refined *Salt-peter*; mix them together: then take an *Aludel*, or an Earthen Subliming-pot, having an hole in the middle of the ſide, and a ſtopple of good Earth; place it in a little *Furnace* in a naked Fire, fit a Glaſs head upon it, and a *Receiver* to the Head. Lute well all the joynings, and give Fire by little and little till the *Aludel* begin to be red at the bottom. Then open the hole, and throw in about half an ounce of the mixture of *Antimony* and *Salt-peter*; ſtop the hole immediately, and the Spirits of the *Salt-peter* will aſcend with great impetuoſity, and carry up with them ſome part of the *Antimony*, which will ſtick to the *Alembick* like Flowers. The noiſe being ceaſed, continue to throw into the *Aludel* new powder, ſtopping the hole and letting the *Detonation* paſs. Continue this till all be ſpent. Then ceaſe the Fire, and the Veſſels being cold unlute them. In the *Receiver* you will find a Spirit of *Nitre* impregnated with the *Sulphur* of *Antimony*; and in the Head or *Alembick* the white Flowers of *Antimony*: but in the Pot you will have

a white fixt Maſs conſiſting of the heavier parts of the *Antimony* and the *Salt Alkali* which is in the *Nitre*; *Edulcorate* the ſame by ſeveral *Lotions*, and free it from all impreſſion of the *Salt-peter*. Afterwards dry the powder and you ſhall have a *Diaphoretick Antimony*, or *Ceruſe* of *Antimony* well prepared. It may be made alſo of the *Regulus* of *Antimony*, as we ſhall ſhew hereafter.

The Flowers in the *Alembick* muſt be *Edulcorated* with Water, to take away the *acidity* of the Spirits of the *Salt-peter*, then dry'd and kept. They vomit ſtrongly, and are uſed in inveterate Diſeaſes, and eſpecially againſt *Melancholy*, *Agues*, and all ſorts of Obſtructions.

The Doſe is from 3 to 6 Grains in ſome Conſerve. Theſe Flowers thus prepared may be uſed more ſafely than thoſe made without *Nitre*, which in ſome ſort digeſts and corrects them. The *acid* Spirit is excellent againſt the *Cholick* and obſtructions; it alſo provokes Urine. The Doſe Is from ten to thirty Drops in ſome convenient Liquor.

The *Ceruſe* of *Antimony* drives out by inſenſible tranſpiration all putrefaction and ſuperfluity in the Body. 'Tis uſed with happy ſucceſs to conſume *Seroſities*, and againſt *Scabs*, *Pox*, *&c.* The Doſe is from 10 to 30 Grains in Broth, or ſome convenient Liquor.

Another Preparation of Flowers of Antimony.

PUT a pound of *Regulus* of *Antimony* into an *Aludel*, and fit ſome Pots over it, as is before taught; place the Veſſels in a *Furnace* and give fire by degrees at firſt; but as ſoon as the *Aludel* is very hot, give a violent Fire and conſume it for the ſpace of twenty four hours, or till all the *Regulus* be aſcended in very white and light Flowers, which gather off with a *Hare's* Foot for uſe. The virtue of theſe Flowers differs not from the others, and they may ſerve in all Diſeaſes requiring a powerful evacuation.

Diaphoretick Antimony.

IN the making of the Flowers of *Antimony* with *Salt-peter* we have already ſhewed the way to make *Diaphoretick Antimony*, or the *Ceruſe* of *Antimony*: but the operation being a little troubleſome, we ſhall ſhew one more eaſy.

Take a pound of good *Antimony*, and three pounds of refined *Salt-peter* being pow-

dered apart; mix them together: then take an Earthen Pot not glaſed proportionate to the quantity of the Powder, make it red hot in the Fire in a *Wind-Furnace*, and put into it about an ounce of the ſaid mixture which will be Calcin'd immediately with a great noiſe. The *Detonation* being ceaſed put another ounce of matter in; and do ſo till all be ſpent. There will remain in the bottom of the Pot a Maſs as white as Snow, containing in it the *Salt Alkeli* of the *Salt-peter*, and the more fixt parts of the *Antimony*; for the Volatile Nitrous Spirit unites with the Volatile Sulphureous parts of the *Antimony*, and they exhale together. The Pot being cool'd, break it, and pour a good quantity of warm fair Water upon the white Maſs to take away the Saline parts; ſtir the Liquor often, then let it ſettle, and pour it off by inclination. Put new warm Water upon the Matter, ſtir it and leave it to ſettle; and repeat this *Lotion* ſo often till the white Powder remaining in the bottom be wholly freed from the *Acrimony* given it by the *Salt-peter*. Dry this Powder by rowling it to and fro in Cap-paper, and then expoſe it to the Air or Sun, and you ſhall have a *Ceruſe* of *Antimony* well prepared.

This preparation may be made with the *Regulus* well purified, adding thrice the weight of good *Salt-peter*, and Calcining and Edulcorating as above; it will be whiter and purer than that made with crude *Antimony*.

But

But obſerve alſo that the *Regulus* makes no *Detonation*, becauſe its ſuperficial *Sulphur* is ſeparated from it, this being partly the cauſe of the noiſe, when it is agitated by the Nitrous Spirits. The virtues of theſe two preparations of *Diaphoretick Antimony* are like thoſe attributed to it in the preparation of the Flowers of *Antimony* with *Salt-peter*. Obſerve alſo that when it hath been kept many years, it returns to its firſt nature, and loſes the qualities acquired by its preparation. Whence it comes to paſs, that the Patient is fruſtrated of the benefit of the Medicine and the Phyſician of the credit he expected from it.

Crocus Metallorum, *or, the Safron of Metals.*

TAke a pound of good *Antimony*, and as much purified *Salt-peter*, each powdered groſly a part, and mix them together; then make an earthen Pot red hot amongſt burning Coals, and put into it two or three ounces of the mixture, covering the Pot immediately with a Cover or Tile. It will make a great noiſe, and caſt forth a great Smoak, which you muſt avoid. Continue to put the mixture in, till all be ſpent. Then encreaſe the Fire till the matter melt; which done take the Pot from the Fire, leave it

to cool, and break it. You ſhall find in the bottom a Maſs of the colour of Liver of *Antimony*, and white *Fæces* upon it, which take away, and keep if you pleaſe to reduce any *Calx* of Metals into a Body. You may powder the *Liver* of *Antimony*, and you ſhall have a *Safron of Metals* well prepared, from which you may by ſeveral *Lotions* ſeparate ſome Nitrous Particles remaining in it: but many uſe it without waſhing or *Edulcorating*.

If you waſh it with warm Water, the firſt *Lotion* will carry off the greateſt part of the Nitrous Salt with ſome portion of the lighter parts of the *Antimony*; ſo that if the ſame be filtred through gray Paper, it will be a very clear Liquor; but by putting ſome *Acid* to it, it will precipitate a very ſubtle reddiſh Powder, which you muſt let ſettle, *Edulcorate* and dry: It hath near the ſame virtues as are attributed to the Flowers of *Antimony*.

An Extract of Antimony.

TAke four ounces of *Crocus Metallorum* prepared as above, and eight pounds of *Muſt*, put them together into a Glaſs-bottle, and proceed as is taught in the preparation of *Extract* of *Mars* made with *Muſt*, or juyce

juyce of Grapes; and you ſhall have a vomiting Extract, of which the Doſe is to be increaſed or diminiſhed according as it has been more or leſs Evaporated. The Doſe is uſually from 6 to 24 Grains.

Butter or Oil of Antimony, *and its* Cinabar.

PUlverize and mix a pound of *Sublimate Coroſive*, and as much *Antimony*; put them together into a *Retort* which place in a Fire of Sand, fitting a *Glaſs-Receiver* to the ſaid *Retort*; give Fire gently, and when you ſee a Gummy Liquor come forth, continue a moderate Fire till no more iſſue out. Towards the latter end encreaſe the Fire, and when no more drops will out, take away the *Receiver*, and encreaſe the Fire till the retort be red hot, to make *Cinabar* of *Antimony* aſcend, as it will do to the neck of the *Retort*, which break when it is cold, and gather off the *Cinabar*.

Note that in this preparation the *Acid* Spirits of the *Salt* and *Vitriol*, which kept the *Mercury* in Cryſtallin form, or *Coroſive Sublimate*, leave the *Mercury* to faſten to the Reguline part of the *Antimony*, which they carry with them through the *Retort* in form of a thick Liquor; but the *Mercury* joyns with

with the *Sulphur* of *Antimony*, and is ſublimed with it in form of *Cinabar*. The *Butter* of *Antimony* is a good *Cauſtic* being applied with a Feather; it eats and conſumes proud Fleſh, and cleanſes *Ulcers*. It muſt be rectified once more in another *Retort* to ſeparate the impurities adhering to it. After which it is alſo more proper to make *Mercurius Vitæ*, or the Powder of *Algaroth*.

The *Cinabar* of *Antimony* is a Specifick againſt the *Epilepſy*, and is mixt with the *Magiſtery* of *Coral* and *Pearl*. The Doſe is from 8 to 15 Grains. If you put this *Cinabar* with an equal quantity of *Salt* of *Tartar* into a *Retort*, you may draw off the *Mercury* alive in a graduated Fire; and the *Antimony* will remain with the *Salt* of *Tartar*; which may afterwards be diſſolved with Water, which filtre and *Precipitate* the *Sulphur* of *Antimony* with diſtilled *Vinegar* or ſome other *Acid*; then *Edulcorate* it by waſhing, and you ſhall have the true *Sulphur* of *Antimony*; from which you may draw the *Balſom* of *Sulphur* which is diſtilled Oil of *Aniſe-Seed*, as we ſhall ſhew in the *Chapter* of *Sulphur*, and much better than that which is drawn from common *Sulphur*.

Another

Another Butter of Antimony.

TAke four ounces of *Regulus* of *Antimony* well purified, and one pound of *Sublimate Coroſive*, powder them apart, then put them together into a *Glaſs-Retort*; which place in a Fire of Sand, and give Fire at firſt gently; having Luted ſlightly a little *Receiver* to the *Retort*. There will come forth a Gummy Liquor which eaſily congeals and ſticks to the neck of the *Retort*, which becoming ſtopt at length, and the Fire continuing, is apt to break for want of Air. To avoid which accident, hold a burning Coal to the neck of the *Retort*, which immediately melts the *Butter* and makes it drop into the *Receiver*. When no more comes forth, take away the *Receiver*, and ſubſtitute another half full of Water. Then encreaſe the Fire till the Sand be red hot, and there will drop out about thirteen ounces of fluid *Mercury* which was before in the *Coroſive Sublimate*, which being changed by the addition of the *Regulus*, and the privation of the *Coroſive* Spirits which forſake the *Mercury* to faſten on the *Regulus*, reſumes its firſt form. If it had been mixed with common *Antimony*, which is very Sulphureous, it would by virtue of the ſaid *Sulphur* be

be converted into *Cinabar*, as we have obſerved in the preparation of the *Butter* of *Antimony* with common *Antimony*.

This *Butter* has the ſame virtues as the former, and differs nothing from it, ſaving that the *Emetic* Powder or *Algaroth* is whiter.

Powder of Algaroth.

TAke about half of your *Butter* of *Antimony*, depurated by rectification; put it into an Earthen Pan with a quart of warm Water, and you ſhall ſee it precipitate preſently in a Powder as white as Snow; the Water having weakened the *Coroſive* Spirits which kept the *Reguline* part of the *Antimony* in diſſolution, and conſtrained them to to quit the Body. The Precipitation being finiſht, ſtir it again, and then let it ſettle, and pour off the Liquor by inclination, which is to be kept a part; for this firſt *Lotion* contains in it all the Saline Spirits which adhered to the *Antimony*. It hath a very pleaſant *Acidity* and is therefore the Philoſophical Spirit of *Vitriol*. Having waſhed and *Edulcorated* the Powder, dry it and keep it.

The Doſe of this Powder is from 2 to 6 Grains. 'Tis employed to cleanſe the viſcoſities and impurities of the Stomach; it purges

ges both upwards and downwards. 'Tis good againſt the *Dropſy*, being mixt with other Purgatives to divert its Vomitive power downwards.

The firſt *Lotion* is uſed in *Julips* for *Fevers*, rendering the ſame tart and agreeable.

Obſerve that all Vomiting Medicaments, eſpecially thoſe of *Antimony*, muſt be taken with great caution. I adviſe thoſe that uſe them to keep in Bed or near a Fire, and to fortify their Breaſt well; with which caution theſe Medicines are of great uſe. The Vomiting muſt be furthered either by putting the Finger down the Throat, or with fat Broths or warm Beer. But be ſure not to drink any thing cold that day; for it would hurt the Somach much, and conſequently all the parts that draw their nouriſhment from it. Nor muſt you ſleep during the vomiting, but keep your ſelf awake and in action. Laſtly, Theſe Remedies are not fit for thoſe that have a long Neck, a weak and narrow Breaſt, ill Teeth and a weak Head.

Mineral Bezoar.

TAke the other half of the *Butter* of *Antimony*, weigh it, and put it in a good large *Matrace*; pour upon it by drops an equal weight of good Spirit of *Nitre*. Avoid the

the hurtful vapours iſſuing from it, and when you have poured in all the Spirit, and the diſſolution is done, pour it into a little *Alembick*, and diſtil it to *Siccity* on a Fire of Sand. Pour again the like quantity of Spirit of *Nitre* upon what remains in the Body of the *Alembick*; the Spirit of *Nitre* will work no more; however Evaporate it by diſtillation to *Siccity*. Put on new Spirit of *Nitre* the third time, and Evaporate it as before. The matter in the bottom of the *Gourd* will be white, dry, and friable. Reduce it into fine Powder, and keep it carefully. This Powder is good againſt Poiſon, which it expels from the Center by Sweat. It is uſed alſo in all diſeaſes cauſed by Seroſities. The Doſe is from 5 to 20 Grains, in Broths or other convenient Liquors.

Obſerve, that all theſe Powders are nothing but the Particles of *Regulus* of *Antimony* diſguiſed, and that they act differently according to the nature of the Salts or *Coroſive* Spirits wherewith they are involved: and they may be eaſily reduced into *Regulus* by means of ſome reductive Salt, which takes away their covering, ſo that they return to *Regulus*, which you may again prepare indifferently as before.

Glaſs

Glaſs of Antimony.

TAke *Antimony* in powder as much as you pleaſe, Calcine it with a gentle Fire in an earthen Diſh not glaſed but reſiſting the fire; make the Calcination under a Chimney in an Airy place, and avoid the Sulphureous exhalations of the *Antimony* which are very hurtful, to the Breaſt eſpecially. Stir the Powder during the Calcination, to keep it from clotting; which happening, powder it again in a Mortar and re-calcine it, and continue the Calcination till the *Antimony* ſmoak no more, and be reduced into Powder of the colour of Aſhes, and deprived of its ſuperficial *Sulphur*, which would hinder its Vitrification, or at leaſt render it an Opaque Glaſs. Then put this *Calx* into a Fire of Fuſion in a very good *Cruſible*, placed upon a little Earthen Plate. Give a violent Fire, and keep it ſo that the matter be in continual Fuſion till it become very *Diaphanous*; which you ſhall know by putting into it the end of a little Iron-rod, to which ſome little matter will ſtick, which you may knock off with a little Hammer; and when the matter is very tranſparent, pour it into a flat Copper Diſh, and you ſhall have a very fair Glaſs of *Antimony*, yellowiſh, drawing towards red

red, prepared without addition of any thing.

Some uſe this Glaſs of *Antimony* in ſubſtance powdered, and mixed with ſome Conſerve, Troſch, or other ſolid form. 'Tis a potent vomit. The Doſe is from 3 to 6 Grains. You may alſo make an Emetic Wine with it by infuſion, as with *Crocus Metallorum.*

The Correction of the Glaſs of Antimony.

POwder finely two ounces of *Glaſs* of *Antimony*, prepared as above, and three ounces and half of *Nitre* well refined; mix them together; then ſet an Earthen Pot not glaſed, and reſiſting the Fire, in a *Furnace* amongſt burning Coals, and having made it red hot, put into it a ſpoonful of the Powder; which being red hot alſo, put another in; and ſo continue by little and little, till all the Powder be heated red in the Fire. After which take the Pot from the Fire, and when it is cool, powder the matter finely, and *Edulcorate* it with two quarts of warm Water, which being poured on ſtir it nimbly and pour off the thick Water into another Veſſel, leaving the courſer Powder in the bottom of the firſt; and as ſoon as it is ſettled pour off the Water by inclination, and dry the Powder for uſe, being a very good and com-

commodious Vomit for all ages. The Doſe is from 3 Grains to 20, in infuſion of White-wine, or ſome other Liquor. You may likewiſe make a Syrup of it by infuſing two ounces of this Powder in three quarts of juice of Apples, or Quinces well depurated, or White-wine in *Balneo Mariæ*, during 24 hours, filtring the Infuſion afterwards through gray Paper, and boiling it gently with three pounds of fine Sugar in a Veſſel of Silver, or Earth well glaſed, to the conſiſtence of a a Syrup. The Doſe is from 2 Drams to 6, tempered with two or three ounces of Spring Water. 'Tis a very good vomit, and oftentimes gives two or three Stools very gently.

Laxative Emetive Tartar.

TAke four ounces of good *Cream* of *Tartar*, powder it finely, and pour upon it in a *Gourd* covered with its Head, as much Spirit of *Salt Armoniac* as to cover it two fingers high; ſet it in a Cellar twenty four hours. After which, ſet this matter in a little glaſed Pot in a *Furnace* of Sand, adding an ounce of *Glaſs* of *Antimony* finely powdered. Then pouring to it a ſufficient quantity of Water, make it boil for ſix or eight hours, filling the Pot from time to

time. Afterwards filtre and evaporate upon hot Sand till it come to have a little skin on the top; then ſet it to cool in a Cellar, that it may the better Cryſtallize. 'Tis a very excellent Medicine. The Doſe for aged perſons is from 10 to 15 Grains; and for the younger, from 1 to 6.

CHAP. IX.

Of Mineral Cinabar.

THere are two ſorts of *Cinabar* in uſe, the one artificially made of common *Sulphur* and *Quick-ſilver*, as is taught in the *Chapter* of *Mercury*; the other natural, compoſed by Nature of much *Mercury*, ſome portion of pure *Sulphur*, and ſome *Earth*. Which three are ſo united that they make a compact body, of a very fair red colour, which is more or leſs deep according to the pureneſs of the Mineral, and the place where it is found. 'Tis brought to us from ſeveral places, as from *Tranſilvania*, *Hungary*, and other parts of *Germany*: but the beſt is found in *Corinthia*, being preferable to all others either for preparations or to be uſed in ſubſtance; for 'tis an excellent Remedy for Diſeaſes proceeding from ſharp *Seroſities*, which

which it corrects and carrys off by the pores. 'Tis uſed alſo mixt with ſome other Specificks for an inveterate *Gonorrhea*. The Doſe is from 10 to 25 or 30 Grains.

The Reviving of Mercury *from natural* Cinabar, *and the ſeparation of the* Sulphur *thereof at the ſame time.*

TAke a pound of good natural *Cinabar*, powder it finely, and mix it with a pound of good Salt of *Tartar*; put this mixture into a ſtrong and well luted Earthen *Retort*, and placing in a *Furnace* with a naked Fire, fit a *Receiver* to it wherein put ſome cold Water. Give a gentle fire at firſt, which encreaſe by little and little to make the *Retort* red gently. Then you ſhall ſee drop forth about eight ounces of fluid *Mercury*, and ſometimes eleven, according to the goodneſs and pureneſs of the *Cinabar*. Let the Veſſels cool, and break the *Retort*, in which you ſhall find a reddiſh Maſs, which you muſt boil in a Veſſel of Glaſs, or good Earth, with four quarts of Water to the conſumption of a third part. Then Filtre the Liquor, which will be red; and the coarſe unprofitable earthineſs will remain in the Filtre. Into this red filtred Liquor diſtill drop by drop ſome good diſtilled *Vinegar*, or other *Acid*: and

the *Sulphur* will be precipitated in a very fine Powder, which you muſt Edulcorate by ſeveral *Lotions* with warm Water. When it is dry, you ſhall have the true *Sulphur* of Natural *Cinabar*, to be uſed as an excellent Remedy in diſeaſes of the *Lungs* and *Breaſt*. The Doſe is from 6 to 15 Grains in ſome Conſerve, or other convenient *Vehicle*..

The Precipitation of the Mercury *of natural* Cinabar *without addition.*

TAke ſeveral good Glaſs *Matraces* of half a pint, with long necks, which Lute well with good Lute capable to reſiſt the Fire: put into each four ounces of *Mercury* revived from *Cinabar*, and place them in a *Sand-Furnace*. Stop the Orifices of the *Matraces* ſlightly to hinder any thing from falling into them. Give a fire of the firſt degree for three weeks, at the end of which encreaſe the Fire another degree, and continue the ſame during three whole Months, encreaſing the Fire from three weeks to three weeks, ſo that in the laſt three weeks the Sand may be red hot. The *Mercury* will be turned to a very red and ſhining Powder, which ſerves with good ſucceſs againſt the *POX*, and other accidents. Two or three Grains made up into Pills with ſome Conſerve

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is a very good *Sudorifick*, and you may encreaſe the Doſe to ſix Grains. It not only cauſes Sweat, but Purges by all the *Emunctories*, and corrects the corruption of the humours. 'Tis a very excellent Remedy, which in many caſes gives ſatisfaction both to the Sick and to the Phyſician.

CHAP. X.

Of Biſmuth, *or Tin Glaſs.*

Biſmuth is a ſort of *Marcaſite*, and a Sulphureous earthy Mineral found uſually in or near *Tin*-Mines. 'Tis ſeldom uſed but outwardly; and its chief preparations are the Magiſtery and the Flowers. *Tin* is near of kin to *Biſmuth*, but contains a purer *Sulphur*. It may be prepared after the ſame manner, and its preparations have almoſt the ſame qualities and virtues.

The Magiſtery of Biſmuth.

POwder two ounces of *Biſmuth*, and putting them into a *Matrace*, pour thereon ſix ounces of good Spirit of *Nitre*. Place the

Matrace upon hot Sand till the *Biſmuth* be all diſſolved, as it will be in about half an hour. Pour the *Solution* hot into a great Earthen Pan containing eight or ten quarts of Spring Water, and the mixture will become like Milk, till growing clearer, the *Biſmuth* forſaking the Spirits of *Nitre* which held it diſſolved will be precipitated to the bottom in a white Powder. Which being ſetled, pour the Water off by inclination, and put freſh to it; repeat the *Lotion* ſo often till the Powder be well Edulcorated; then dry it in the Shade and keep it for uſe. 'Tis a very good *Coſmetick*, ſerving to beautify the Face by being mixt in *Pomatum*, or in the Waters of *Nymphea*, *Wild-Tanſy*, and others. 'Tis alſo uſed for the *Itch*, and all maladies of the skin.

The Flowers of Biſmuth.

Biſmuth as well as *Zink* may be ſublim'd with the addition of *Salt-peter*, or without addition, in the ſame manner as *Antimony*, to which we refer the Reader for avoiding of vain Repetition. The Flowers of *Biſmuth* and *Zink* work great effects in Plaiſters, to ſweeten the *Acrimony* of the corroding humour of *Ulcers*, and to conſume their ſuperfluous *Seroſity*. The Flowers prepared

pared with the addition of *Salt-peter* may be turned into Liquor by melting in a Cellar like *Salt* of *Tartar*.

CHAP. XI.

Of common Salt.

THere are three ſorts of *Common Salt*. That which is made out of *Salt-Springs*, *Sal Gemmæ*, or *Foſſible Salt*, and *Sea-Salt*. The firſt is made by Evaporating the Salt Water in great Leaden Pans, at the bottom of which the Salt is found very white. *Sal Gemmæ* comes naturally ſuch in many places, as near *Cracovia* in *Poland*, where there is a very plentiful Mine of it, out of which they dig vaſt pieces like a *Diaphanous* Rock. *Sea-Salt* is made on the Sea-ſhore in Pits during the Summer; the humidity of the Sea-Water being drawn up by the heat of the Sun, the reſt remains dry. Any of them is equally uſeful for Phyſick; for though they differ in form, yet being diſſolved, filtred, and Cryſtallized each apart, there is no difference in the Cryſtals either as to taſt or figure. Nevertheleſs *Sea-Salt* is moſt uſed as moſt commodious and common in our Country, and 'tis purified as follows.

The Purification of Salt.

DIſſolve what quantity you pleaſe of *Sea-Salt* in ſix times as much Rain Water, and ſet it in a Veſſel of Pewter, Copper, or glaſed Earth upon a little Fire; Filtre the *Solution* through gray Paper, and having Evaporated all the Humidity, you ſhall have a very white and well purified *Salt*.

The Calcination of Common-Salt.

PUT what quantity you pleaſe of *Sea-Salt* into an Earthen Pot which reſiſts the Fire, cover the ſame with its covering and put Fire round about it (which they call *Ignis rotæ*) and when the Salt begins to be hot, it will crackle and be reduced into Powder; continue the Fire, (but moderately) till the Salt make no more noiſe. Then let the Pot cool, and you ſhall find the Salt calcined and deprived of all ſuperfluous humidity. This is called *Decrepitated Salt*; The Chymiſts uſe it to *Regaliſe Aqua-fortis*, as we ſhall ſhew in the following *Chapter* of *Nitre*.

The

The Spirit of Salt.

ARtiſts have tried divers ways to extract the Spirit of *Salt* with eaſe. Some diſtill *Calcin'd*, or *Decrepitated Salt* alone, and without addition with a ſtrong Fire; but beſides that Salts being in Fuſion penetrate and break all veſſels, they pertinaciouſly withhold the Spirits. Others attempt to reduce *Salts* into Spirits, and afterwards into ſweet Cryſtals by means of an Earthen *Retort* with a hole in the top, by which they put ſome drops of Water upon the *Salt* which muſt be melted in the ſaid *Retort* with a ſtrong Fire, and then they ſtop the hole till the vapour of the Water put into the hole be paſſed into the *Receiver*; and thus they continue till according to their opinion all the *Salt* be converted into Spirit. But as we have ſhewn that the Veſſels containing Salts melted in a very violent Fire, cannot reſiſt long; and ſince Salts retain their Spirits whilſt they are in Fuſion, I conceive no body ſhould amuſe themſelves with ſuch preparations. The true way to Extract this Spirit with eaſe is, to mix *Salt* with ſome Body that may hinder its Fuſion, but it muſt be ſuch a Body as may communicate nothing of its own, as Potters Clay, or Bole.

Take

Take therefore two pounds of *Common-Salt* not *decrepitated* (becauſe in this Calcination it loſes part of its Volatile Spirits, eſpecially being *decrepitated* with a gentle Fire without Fuſion) dry it in a Baſon with a gentle fire in order to be finely powdered, and mix it with eight pounds of Potters Earth, or Bole pulveriſed in like manner; put this mixture to a Glaſed *Retort*, ſo that the third part be void, and place it in a cloſe Reverberatory Fire. Fit a great *Glaſs-Receiver* to the *Retort*, luting well the joynts, and give a very ſmall Fire the firſt ſix hours, during which the Phlegm will come forth; then encreaſe it a little during other ſix hours, and the Volatile Spirits will begin to come forth and appear in the *Receiver* like white Clouds. Continue to encreaſe the Fire from ſix hours to ſix hours to the utmoſt violence. The whole operation will be finiſht in twenty four hours. After which leave the Veſſels to cool, unlute them, and keep the Spirit in a very ſtrong Vial. The Odour of it is ſufficiently ſweet, its ſavour agreeably *Acid*, and its colour yellow as Gold.

This Spirit may be rectified by an *Alembick* in *Balneo Mariæ*, and about three quarters drawn off by diſtillation, which will be Phlegm and ſome Spirits mixt confuſedly together; the other quarter left in the *Gourd* will be a more corroſive Spirit, improperly called Oil, which keep apart from the other. But note that the corroſive Spirit muſt

be

be put into a very ſtrong Vial of very good Glaſs; otherwiſe it will corrode the ſame.

The Volatile Spirit is an excellent Remedy againſt the Stone and Gravel, it powerfully diſſolves the *Tartar* and *Viſcoſities* of the Body, it opens the obſtructions of the *Liver* and *Spleen*; it gives great help to the *Dropſy* by quenching thirſt; it cures the *Jaundies*, and hinders a *Gangrene*; and being mixt with Oil of Sope it aſſwages the pains of the *Gout* and diſſipates the *Nodoſities*.

The Doſe of this Spirit is from 10 to 30 drops, or elſe to a gratefull acidity in convenient Liquors. The Corroſive Spirit may be employ'd for diſſolving of Metals.

CHAP. XII.

Of Nitre, *or* Salt-peter.

Nitre, or *Salt-peter* is a Salt partly Sulphureous and Volatile, and partly earthy; the taſt of it is Saltiſh and bitter. 'Tis drawn out of the Earth, and out of the ruins of Houſes, Vaults, and Cellars, eſpecially out of Stables, by reaſon of the great quantity of Volatile Salt in the Urine and Excrements of Animals, which is united to the Salt of the Earth by the continual action of the Air.

Authors

Authors call it ſometimes *Cerberus*, the *Infernal Salt*, the *Dragon, Serpent, &c.* But we ſtand not upon names. As for the choice of it, it muſt be white, cryſtallin, in long *Hexagonal Needles*; the taſt muſt be *Acid*, inclining to Sourneſs or *Acerbity*; and if it exhales totally from a burning Coal, 'tis a ſign of its goodneſs and pureneſs; but if it leave any remainder upon the Coal, it contains too much impurity, in which caſe it muſt be purified before it be imployed for Chymical Operations.

The purification of Nitre.

PUT what quantity of *Nitre* you pleaſe into a Copper Baſon, and pour upon it three or four times as much Rain-Water. Make it boil upon a little Fire till the *Nitre* be diſſolved, then ſtrain it through a woollen Cloath into an Earthen pan, which expoſe in a cold place twenty four hours. At the end of which you ſhall find the *Nitre* reduced into fair tranſparent Cryſtals. Pour off the Water into a Baſon, and Evaporate a third part of it, and ſet the reſt to Cayſtallize as before. Continue this till all the *Salt-peter* be turned into Cryſtals; but the firſt Cryſtals contain the pureſt of the *Salt-peter*, and therefore muſt be dried and kept apart, for

for preparations to be uſed at the Mouth. The other Cryſtals may ſerve to make *Aqua-fortis*, or other things of leſs conſequence.

Mineral Cryſtal, or Sal Prunellæ.

MElt a pound of well purified *Salt-peter* in a* *Cruſible* that reſiſts the Fire and penetration of Salts, and when it is very fluid, throw into it by little and little an ounce of flowers of *Sulphur*; which being exhaled, caſt the *Salt-peter* into a very clean Baſon, and ſpread it abroad; then breake it and keep it dry in ſome veſſel well ſtopt. 'Tis an excellent Remedy againſt the putrid malignant *Fevers* called *Prunellæ* or Burning, from whence 'tis termed *Lapis Prunellæ*. The Doſe is from twelve Grains to one Dram in ordinary *Ptiſane*, or ſome other convenient Liquor.

Some make uſe of purified *Salt-peter* without preparing it with *Sulphur*; which I diſapprove not, becauſe the *Sulphur* carries away with it part of the Sulphureous Volatile Salt of the *Salt-peter*, and ſo deprives it of the pureſt part of it ſelf.

An Antifebril Salt, *or a Salt againſt* Fevers.

TAke two ounces of purified *Salt-peter*, and two ounces of Flowers of *Sulphur*, powder them, and put them into a good large *Retort*; pour thereon ſix ounces of the Water of diſtilled Urine, and place it in a *Sand-Furnace*, ſo that the Sand be not higher than the matter, and that two thirds of the *Retort* be out of the Sand in the Air. Fit to it a great *Receiver*, but Lute it not, becauſe the Spirits iſſue out of theſe matters with ſuch violence, that if there be no air, the Veſſels break. Begin to diſtill with a very ſmall Fire, and when no more humidity comes forth, encreaſe the Fire by little and little, but not too haſtily; for as ſoon as the *Sulphur* and the *Salt-peter* begin to melt, they will flame, and drive out their Spirits impetuouſly in red fumes into the *Receiver*; which being all come forth, let the Veſſels cool, and you ſhall find in the bottom of the *Retort*, being broken, a fixt Salt of a bitteriſh taſt, which you muſt put into a little earthen *Gourd*, and pour upon it the Spirit contained in the *Receiver*, to unite it to its proper body. Reject as uſeleſs the Flowers of *Sulphur* ſublimed in the *Receiver*, and cover the *Goura* with another Veſſel, and ſet it upon

pon hot Sand for three or four hours, during which the fixt Salt will be diſſolved in its proper Spirit. Filtre the *Solution* and Evaporate it gently to *ſiccity*; you ſhall have a Salt white as Snow, of a very agreeable *Acid* taſt, which you muſt keep in a Vial well ſtopt. 'Tis a very excellent Remedy in continual and intermitting *Fevers*. It powerfully reſiſts putrifaction, and opens all the obſtructions of the body. 'Tis given in the beginning of fits, in ſome convenient Liquor. The Doſe is from 8 to 30 Grains.

Sal Polycreſtes, *or of many uſes.*

THis Preparation comes in place, becauſe *Nitre* is the Baſe of it. Take a pound of purified *Salt-peter*, and a pound of *Sulphur*; reduce them together into powder; then take a good Earthen Pot that reſiſts the Fire and has a flat bottom. Set it in a *Wind-Furnace* with Coals round about, which kindle by degrees to preſerve the Pot; and when the Pot is red hot, put in about two ounces of the mixture and ſtir it: the matter will flame preſently, and the Volatile parts of the *Nitre* will exhale with part of the *Sulphur*. When the Flame is ceaſed, put two ounces more in, ſtirring the ſame continually. Do thus till all the mixture be employ'd. Then Calcine

cine it by ſtirring it ſix hours more, during which the matter muſt be always red hot without melting; which would retain the burnt odour of the *Sulphur*, and the Salt would be grayiſh: but with theſe cautions you ſhall have a Salt of a Roſe colour without ſmell, and of a bitteriſh taſt. It may be uſed without more preparation; or if you deſire it yet purer, diſſolve it in a good quantity of warm Water, and having Filtred it, Evaporate it gently in ſome glaſed Earthen Veſſel till it have a ſcum upon it; then ſet it in a Cellar, and it will Cryſtallize at the bottom and ſides of the Veſſel. The Figure of this Salt is ſquare, much like that of common Salt. 'Tis uſed againſt obſtructions of the *Liver*, *Spleen*, *Pancreas*, and *Meſentery*; it unlooſens *Viſcous* matter and Purges gently downwards. The Doſe is from two Drams to ſix. 'Tis uſually diſſolved overnight with Spring Water, and taken the next morning. Perſons whoſe Nervous parts are weak and delicate, muſt wholly abſtain from all ſorts of preparations of *Nitre*, as *Cryſtal Mineral*, and *Sal Polycreſtes*; which are not to be put into other compoſitions but to ſharpen them and make them more penetrating, or to temper their heat; in which caſe the doſe muſt be leſs than that of the other Medicaments; as for example, with the weight of two or three ounces of *Sena* it ſuffices to put half a Dram or two Scruples of Mineral Cryſtal, or twice as much of *Sal Polycreſtes*.

Spirit

Spirit of Nitre.

TAke two pounds of *Salt-peter* refined in Powder, and eight pounds of common Bole or of Potters Earth dry'd and powdered; mix them together, and put them into a great *Retort* ſo that the third part thereof be empty; place the ſame in a cloſe *Reverberatory* Fire, fitting to it a great *Receiver*, and Luting the joynts very well. Let the Fire be gentle at firſt, and encreaſe it from ſix hours to ſix hours to the utmoſt violence. A Phlegmatic Water firſt comes out, then a Spirit, which during the diſtillation appears as red as Fire; which redneſs proceeds from the internal *Sulphur* of the *Salt-peter*, and has given occaſion to ſome Authors to term this Spirit the *Blood of the Salamander*. The diſtillation is uſually finiſht in twenty four hours; which ended, let the Veſſels cool, then unlute the *Receiver*, mollifying the Lute with wet Linnen; and keep the Spirit in a ſtrong Vial.

'Tis a good Remedy againſt the *Colick*, and againſt all obſtructions, *Fevers*, and the *Peſtilence*. The Doſe is from 6 to 20 drops in ſome convenient Liquor.

Aqua-fortis.

THough *Aqua-fortis* is made ſeveral ways, and ſomtimes with the addition of *Alum*, *Vitriol*, *Verdigreaſe*, and other things, yet we ſhall inſert the preparation of it in this *Chapter* of *Salt-peter*, becauſe tis this which gives it its principal diſſolving virtue. It has its name from its force of diſſolving almoſt all Metals, and Minerals, even Gold too if it be Regaliſed by the addition of *Salt Armoniac* or common *Salt*. Now, to make good *Aqua-fortis*, take three Pounds of *Salt-peter* and as much of *Vitriol*, or green *Copperas*; mix and powder them groſly, and put them into a Luted *Retort* in a cloſe *Reverberatory Furnace*; fit a large *Receiver* to the *Retort*, and having Luted the joynts exactly well, give a very gentle Fire for eight hours to make the Phlegm come forth; then increaſe the fire one degree, and you ſhall cauſe reddiſh Spirits to ſtream out; keep the Fire in that condition four or five hours; then encreaſe it by little and little to the utmoſt violence, quite opening the covering of the *Furnace* and that of the *Aſh-hole*. Continue the Fire till the heat of the *Receiver* abate, and wait not till it become clear; for though you ſhould continue the Fire many days, the Spirits

Spirits would be in continual agitation by the heat. But as ſoon as the *Furnace* and Veſſels begin to loſe their heat, the Spirits ſettle to the bottom and the *Receiver* grows clear. This operation is uſually finiſht in twenty hours. The Veſſels being cool, unlute the Receiver, and keep the Water in a ſtrong Bottle well ſtopt with Wax.

You may alſo make *Aqua-fortis* with *Roche Alum* and *Salt-peter*, and ſometimes with addition of other ingredients; but being the preparation of theſe Waters is not different from this, I will not enlarge this Book with them, I will only give notice to the Reader, that the *Aqua-fortis* made with *Roche Alum* and *Salt-peter* is to be preferred before that made with *Vitriol* for preparing red or white *Precipitate*, which is to be employ'd for diſeaſes of the skin. Which is alſo to be obſerved in the preparations of the *Precipitates* above deſcribed, according to the different intention of uſing the ſaid Remedies.

Aqua Regia, *or, Water to Diſſolve Gold.*

THis Water takes its name from its virtue of diſſolving Gold, the King of Metals. Its Baſe is Spirit of *Nitre* or *Aqua-fortis*, which becomes Regal by the addition of *Salt Armoniac*, or *Common Salt*, in manner following.

Take four ounces of *Salt Armoniac* unpuriſied and pulveriſed, put it into a great *Matrace*, and pour upon it a pound of good *Aqua-fortis*; place the *Matrace* upon Sand moderately hot, that the *Aqua-fortis* may gently diſſolve the *Salt Armoniac*. Stop not the *Matrace* leſt it ſhould break, and avoid the vapors which riſe when the *Aqua-fortis* begins to act upon the *Salt Armoniac*; for they are fierce Spirits which cannot be condenſed any more, and are very hurtful. As ſoon as you ſhall ſee the *Salt Armoniac* diſſolved, remove the *Matrace* from the Sand, and when it is cold put the Water into a Vial, and ſtop the ſame with a Bladder and Wax.

Another Regal Water.

PUT into a *Retort* half a pound of *Sea Salt* or *Sal Gemmæ* in Powder, and pour thereon a pound of good Spirit of *Nitre*, or good *Aqua-fortis*; then diſtil in a Sand Fire into a *Receiver* till the *Salt* remain dry in the bottom of the *Retort*, and keep the water in a Vial well ſtopt.

Another

Another Regal Water.

TAke a pound of *Sea-Salt*, or *Sal Gemmæ*, and as much of good *Salt-peter*; powder them finely, and mix them with eight pounds of common Bole powdered; then diſtil them with a *Retort* in a *Reverberatory Fire*, in the ſame manner as we have directed the diſtillation of Spirit of *Nitre*, and you ſhall have a Regal Water which will eaſily diſſolve Gold. Tyeſe three ſorts of *Regal Water* are equally good.

CHAP. XIII.

Of Salt Armoniac.

THe *Salt Armoniac* of the Ancients was found in divers parts of *Aſia*, and particularly in *Lybia*, in places where the Camels of Caravans reſted, whoſe Urine was imbibed in the Sand, and the Volatile Salt thereof was ſublim'd by the Rays of the Sun to the ſurface of the Sand; and they of the Country gathered it up to ſell to other Na-

tions. But the modern *Salt Armoniac* is compounded of *Sea-Salt*, Chimney-Soot, and the Urine of Animals. Theſe three are ſo artificially mixt and incorporated, that though the *Sea-Salt* be very fixt, yet being mixt with the Volatile Salts of Urine and Soot, there ariſes a Compound of them, which though leſs Volatile than the ſaid Salts, yet cannot reſiſt the violence of the Fire: for if you put it into a *Cruſible* amongſt burning Coals, it flies all away. But this compoſition may eaſily be deſtroyed by ſeparating the Volatile Salts from the *Sea-Salt* by the addition of ſome matter to fix and retain it. As for the manner of preparing it, I will not encreaſe this Book by ſetting it down, ſince the ſaid Artificial Salt is commonly and cheaply enough to be had from the Druggiſts. But ſince it is uſually full of impurities, we will begin with the purifying of it.

The Purification of Salt Armoniac.

POwder a pound of *Salt Armoniac*, and diſſolve it in a *Gourd* upon hot Sand with three pounds of Rain-water; filtre the *Solution* through gray Paper, and Evaporate it to *Siccity*, and you ſhall have a very pure Salt as white as Snow. This Salt provokes Sweat and Urine, and reſiſts putrifaction. Tis uſed

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in Quartan Agues, and outwardly againſt *Gangrenes*, and in Eye-waters. The Doſe is from 8 to 24 Grains in ſome Broth or other convenient Liquor.

The Flowers of Salt Armoniac.

PUlverize together a pound of *Salt Armoniac* and as much of Common Salt, and put them into a *Gourd* covered with its head, and place the ſame in a Sand-*Furnace*; give a gentle Fire at firſt, encreaſing it by little and little till you ſee the *Salt Armoniac* aſcend into the Head like Meal; then continue the Fire in the ſame degree for five or ſix hours. After which let the Veſſels cool, and gather off what is aſcended into the Head, and mix it with new Salt, and ſublime as before; Repeat this thrice, and you ſhall have Flowers well purified.

Theſe Flowers being purer than *Salt Armoniac* ſimply purifyed by *Solution*, *Filtration*, and *Coagulation*, act with more efficacy; ſo that the Doſe is but from 4 to 12 and 15 Grains. Their uſe is for *Cronical Diſeaſes*.

They may be alſo prepared with Filings of Steel, mixing an equal quantity thereof with *Salt Armoniac*; and the Flowers have the more force and virtue, in that they are

impregnated with a portion of *Mars* which encreaſe their aperitive virtue.

The Urinous Volatile Spirit of Salt Armoniac.

WE have ſhewed in the beginning of this *Chapter* that *Salt Armoniac* is compounded of the Salt of Urine and that of the Soot of Chimneys (which are very ſubtle and Volatile Salts) and of *Sea-Salt*, which is an *Acid Salt* and more fixt than the other two. Theſe three Salts mixt together make but one, which holds a mean between the Volatility of the two former, and the fixedneſs of the latter. and though this mixture ſeems perfect, and the conjunction of theſe Salts of ſeveral families inſeparable; yet when you well underſtand their qualities and properties, you will ſeparate them very eaſily. The enſuing operation will inſtruct you. Powder and mix together a pound of *Salt Armoniac* and as much of Salt of *Tartar*; make them into a Paſt with four or five ounces of Water, which put into a Glaſs *Gourd*, whereunto fit an *Alembick* with a *Receiver*, and having luted the joynts exactly, place the *Gourd* in a *Sand-Furnace*. Begin the diſtillation with a moderate heat, which encreaſe by little and little. As ſoon as the the matter begins to heat the Salts will

will act upon one another, and the *Sea-Salt* will joyn with the Salt of *Tartar*, and they will both remain in the bottom of the *Gourd*. But the Urinous and Fuliginous Volatile Spirits will be looſned from their Fetters, and aſcend through the *Alembick* into the *Receiver*. Continue a moderate Fire till all the Spirits are gone out, then encreaſe in by little and little to make the Flowers aſcend, which will ſtick to the Head and the upper part of the *Gourd*. The whole oderation requires eight or ten hours. Let the Veſſels being cool be unluted, and you ſhall find the Urinous Volatile Spirit in the *Receiver*, and the Flowers in the Head and upper part of the *Gourd*, and in the bottom thereof, a fixt Maſs containing the *Acid Sea-Salt* with the Salt of *Tartar*. Theſe three ſubſtances muſt be kept apart. The Volatile Spirit is one of the moſt excellent Remedies that can be invented; for it opens all obſtructions in general, and acts powerfully by Sweat and Urine. 'Tis very good in *Fevers*, eſpecially the putrid, in *Palſies*, *Epilepſies*, *Hyſterical* fits, and the *Plague*, reſiſting all corruption. It likewiſe aſſwages the pains of the *Gout*, applied externally. It may be Sublimed into a Volatile Salt, by putting it into a long-neck'd *Matrace* with a ſuitable *Alembick* having a large *Betty*, and placing the ſame in a very moderate Sand-fire. For this fiery Salt upon the leaſt heat leaves its Phlegmatick Water which kept it in a liquid form. But 'tis better

ter to leave it in a liquid form than to ſublime it into Salt, which is hard to be kept; whereas the Phlegm reſtrains it and hinders its activity; for which reaſon it may be given from 8 to 30 drops, but the Doſe of the Salt is but from 3 to 8 or 9 Grains.

The Flowers in the *Alembick* are nothing but part of the *Salt Armoniac* which was not cloſely mixt with the Salt of *Tartar*. They are of the ſame uſe as *Salt Armoniac* well purified. But the Maſs remaining in the bottom of the *Gourd* affords an *Acid* Corroſive Spirit, as follows.

The Acid Spirit of Salt Armoniac.

REduce into fine Powder the Maſs remaining in the bottom of the *Gourd* after the foregoing diſtillation, and mix it with four times as much Bole in Powder. Put the mixture into a *Retort* of Glaſs or Earth well Luted, and diſtil it in a cloſe *Reverberatory Fire*, obſerving exactly in this diſtillation all the circumſtances deſcribed in the diſtillation of common Salt. You may rectify this Spirit in an *Alembick* in *Balneo Mariæ* and it will aſcend eaſily.

This Spirit is one of the greateſt Diſſolvents that we know; for it diſſolves *Gold*, *Copper*, *Iron*, *&c.* and Volatilizes them in an *Alem-*

Alembick by means of reiterated *Cohobation*. Beſides which, 'tis the moſt agreeable *Acid* that Chymiſtry hath invented. Some drops being given in Broth to thoſe that have *Fevers*, for it tempers the inward heat by its ſubtlety and ſharpneſs. It is alſo more Diuretical than other Corroſive Spirits. The Doſe is from 6 to 30 drops, or to an agreeable Acidity.

The fixation of Salt Armoniac.

THis fixation is made by mixing *Salt Armoniac* with ſome body that may hinder its exhaling in a violent Fire. To which purpoſe ſerve the *Alkali* Salts of Plants, of the *Calx* of Egg-ſhels, and other Shels, of quick Lime, and of the *Calx* of divers Minerals, and amongſt others of *Zink*, *Lapis Calaminaris*, and *Hæmmatites*. Yet theſe Bodies cannot totally fix the whole body of *Salt Armoniac*, but retain only a part of it, namely the *Sea-Salt*, letting go the Fuliginous and Urinous part which flies into the Air. The moſt uſual way is to take equal quantity of of quick Lime and *Salt Armoniac*, and to put them powdered together into a good *Cruſible* amongſt burning Coals. You ſhall preſently ſee the Urinous Spirits diſintangle themſelves and fly away, but the common Salt which

which entered into the compoſition ſtays behind with the quick Lime, and being melted therewith runs in the *Cruſible* like Oil. Caſt this melted matter into a Baſon or Mortar heated, and let it cool. You ſhall have a tranſparent Maſs like Cryſtal, which may be reduced into little parcels whilſt it is a little warm, and kept in a Vial well ſtopt with Wax. 'Tis a very good *Cauſtic*, and ſerves commodiouſly for *Cauteries*. If this Salt be left to the Air, it diſſolves in a few dayes into Liquor, which you muſt Filtre. It ſerves for the Reſuſcitation of Metals into fluid *Mercury*, as ſome think.

CHAP. XIV.

Of Roche Alum.

THE name of *Alum* is given to divers matters. *Firſt*, There is a ſort of *Talc*, which they call in *Latin Alumen ſciſſile*, becauſe it may be cut into tranſparent Leaves like Glaſs. There is another Species called *Alumen Plumoſum*, or *Lapis Amiantus*. But theſe ſerve but little for Phyſick, and therefore I ſhall only inſiſt upon *Roche Alum*, which is a Mineral Salt, Earthy and *Acrimonious*, full of an *Acid* Spirit. It is often found

found condenſed in the Veins of the Earth, and ſometimes 'tis drawn from Aluminous Springs, by Evaporation. It is likewiſe found in Mineral Stones, from which it is drawn by diſſolving the ſame in Water, and afterwards Evaporating it. It is ſeldom uſed for inward uſe, but often in *Gargariſmes* for inflammation of the Throat. It heals *Cancers* of the Mouth, ſtrengthens the Gums, and conſumes the Spongy Fleſh and other ſuperfluities of Wounds and Ulcers. But it may be uſed inwardly too, as in the *Dropſy*, and difficulty of Urin, from one Scruple to half a Dram in ſome convenient *Vehicle*, being prepared as follows.

The Purification of Alum,

POwder and diſſolve of *Roche Alum* in ſixteen pounds of Rain-Water; Filtre the *Solution*, and Evaporate and Cryſtallize it in a cool place, as you would proceed with any other Salt; and by this means you ſhall have it pure and fit for all preparations.

The

The Diſtillation and Calcination of Alum.

PUT into a great Glaſed *Retort* two pounds of *Alum* purified, ſo that three quarters of the *Retort* be empty, to leave room for the *Ebullitions* of the *Alum*. Place the *Retort* in a cloſe *Reverberatory Fire*, and fit a large *Receiver* to it. Make the Phlegm come forth with a little Fire, which encreaſe by degrees till the Spirits begin to ſtream forth in white Clouds. Then open the *Regiſters* by little and little, and continue the Fire to the utmoſt violence, after which let the Veſſels cool. You ſhall find in the *Receiver* an *Acid* Spirit mixt with a good quantity of Phlegm, And having broken the *Retort*, you ſhall find the *Alum* there Calcin'd into a very white and light Maſs. Rectify and ſeparate the Spirit from its Phlegm, putting into a Glaſs *Retort* all that was in the *Receiver*, and placing the ſame in a *Sand-Furnace*; as you diſtil with a little Fire, the Phlegm will come forth firſt, and as ſoon as you taſt the drops *Acid*, change the *Receiver*, and continue the Fire till all the Spirits be aſcended and there remain nothing in the *Retort* but a little Earth which the Spirits had brought away with them in the firſt diſtillation, This Spirit is good in *Fevers* being taken in ordinary drink;

'tis

'tis very Diuretick and opening, and is very proper for *Cancers* in the Mouth. But being unpleaſant in taſt, Spirit of Vitriol may ſerve in its place upon all occaſions. The Phlegm is very good in Eye-waters, for inflammations of the Eyes; it is alſo good for the *Erſipelas* and to waſh Sores and Ulcers. The Calcin'd *Alum* is employed outwardly to dry and conſume ſuperfluous fleſh in old *Ulcers*, and Sores. It may be likewiſe Calcined in a *Cruſible*, or upon a Plate, but we have taught the way to make benefit of all its parts.

Obſerve that neither *Roche Alum* nor *Vitriol* need any mixture of Bole, or other fat Earth powdered, when you diſtil them, as *Common Salt*, *Sal Gemmæ*, *Salt-peter*, and others have to hinder their melting; becauſe Vitriolick and Aluminous Salts contain a ſufficient quantity of Mineral Earth of difficult fuſion.

A Febrifugous Salt of Alum.

POwder half a pound of Calcin'd *Alum*, and put it into a Glaſs-*Gourd*, and pour upon it two pounds of good diſtilled *Vinegar*. Digeſt them in hot Sand till the *Alum* be diſſolved; Filtre the *Solution* and after Evaporation of the third part, ſet the reſt to Cryſtallize in a Cellar. Pour off by inclination the

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the Water above the Cryſtals, and Evaporate and Cryſtallize again till you have drawn out all the Cryſtals; which dry and mix with a like quantity of *Nutmegs* and Mineral Cryſtal; of which being finely powdered you may with happy ſucceſs give a Dram in intermitting *Fevers*, eſpecially ſuch as proceed from corruption and abundance of Humours. This Powder is taken in Wine or ſome other proper Liquor in the beginning of the fit.

CHAP. XV.

Of Vitriol.

Vitriol is a Mineral Salt near of kin to *Roche Alum*, but containing in it ſome Metallick ſubſtance, eſpecially Iron or Copper. There are ſeveral ſorts of it, which differ in colour and taſt by reaſon of the divers ſubſtances wherewith they are mixt. That which is blew, compact, and in great Cryſtals is called *Vitriol of Cyprus*, though it comes from *Hungary*. It is very bitter and ſharp, becauſe it contains much of the ſubſtance of Copper; and though the deareſt of all, yet it is not better worth; and I would not adviſe any body to make uſe of it except for Eye-water or outwardly by reaſon of

of the violent Vomitings which it cauſes. There is another ſort of *Vitriol* which is greeniſh, and of a ſweetiſh taſt, and in ſmall Cryſtals; being found in *Sweden*, *Liege*, and other parts of *Germany*. The beſt is moſt compact and dry, which being rubbed upon Iron, does not dye the ſame with the colour of *Copper*; which colour ſhews it to be mixt with Copper, and conſequently more hurtful; whereas by not tincturing the ſame it ſhews that it partakes more of Iron, and is fitter for all preparations, whatever many many Authors ſay to the contrary. There is alſo white *Vitriol*, which comes from *Vitriol*-Springs, and is not charged with any Metallick ſubſtance, which gives the colour to other ſorts of *Vitriol*. All the ſeveral *Vitriols* are formed by Nature in the entrails of the Earth; but they are alſo made by evaporating the Springs which contain them, as alſo by the Diſſolution, Evaporation and Cryſtallization of *Marcaſites* or Vitriolick-Stones. But ſince *Vitriol* is uſually charged with impurities, we will begin with its purification.

The Purification of Vitriol.

Diſſolve in Rain-Water what quantity of *Vitriol* you pleaſe; put the *Solution* into Pitchers or Bottles, and ſet it to digeſt in

Horſe-dung, or *Balneo Mariæ* for eight or ten days; during which, much earthyneſs will ſeparate to the bottom; Filtre the Liquor, and having Evaporated about the half, Cryſtallize the remainder; Evaporate again the Water above the Cryſtals; and ſo continue to Evaporate and Cryſtallize till all be turned into Cryſtals.

Vomitive Vitriol *called* Gilla.

Diſſolve in Rain-water, or *May-Dew*, half a pound of white *Vitriol*, and reduce it into Cryſtals, as is ſhewn in the Purification of *Vitriol*; reiterating the Diſſolution, Filtration, and Cryſtallization four times. You ſhall have a *Vitriol* well prepared, fit to be uſed in *Tertian* or other *Fevers* proceeding from corruption of humours in the firſt Region; for it evacuates gently by Vomit. It likewiſe kills Worms, and reſiſts putrifaction. The Doſe is from 20 Grains to half a Dram in Broth, Cordial-waters, or ſome other Liquor. Yet ſome go as high as a whole Dram; but this Doſe is a little too ſtrong for our Climate.

The Calcination of Vitriol.

THat which is commonly called the *Calcination of Vitriol* is nothing but an exſiccation and deprivation of its ſuperfluous humidity, which is effected either by ordinary Fire or the Rays of the Sun. The former is thus, Put twelve pounds of *Vitriol* into an earthen Pot not Glaſed, which place amongſt burning Coals; and the *Vitriol* will ſoon be reduced into Water. Boil it to the conſumption of the humidity, and till it become a hard compact Maſs of a whitiſh gray colour. If you continue the Fire longer, till the Pot be red hot, the Maſs will become yellow and at length of a reddiſh brown, which is that which they call *Colcothar*, wherewith Blood is ſtanched; it is alſo uſed in *Lethargies*, being put up the Noſe, to awaken the ſtupid ſenſes by ſneezing. 'Tis alſo a great Deſiccative for Sores and Ulcers.

The ſecond Calcination is made by expoſing it thinly ſpread to the Beams of the Sun in *July*, ſtirring it often that it may be better penetrated by the Sun, and reduced into a Powder as white as Snow, very light, and leſs weighty than the *Vitriol* by a third part. This is that which they call the *Sympathetick* Powder, which they pretend cures Wounds after

and admirable manner, being applyed upon Linnen dipt in the Blood of the Wound. But note that *Roman Vitriol* is required to the making of this Powder.

The Diſtillation of Vitriol.

TAke eight pounds of *Vitriol* dryed in the Sun, which is to be preferred before any other, as well by reaſon of the impreſſions it may receive from him, as becauſe it is more open, Spongy, and apt to part with its Spirits. But in defect thereof, take *Vitriol* dried in the Fire to whiteneſs and no more: put it into an Earthen *Retort*, and place the ſame in a cloſe *Reverberatory Furnace*, and fit to it a large *Receiver*, Luting the joynts thereof exactly. Let the Fire be ſmall during ten or twelve hours, in which time all the Phlegm will come forth; then open a little the hole of the top of the *Furnace*, and the *Aſh-hole*, to encreaſe the heat a little, and drive the Volatile Spirit into the *Receiver*. But govern the fire well; for if the firſt Spirits be never ſo little overſtirred, they iſſue ſo impetuouſly that they break the *Receiver*. Encreaſe the Fire at the end of other twelve hours by opening the hole above, and the Aſh-hole a little more than before; and continue to augment it by little and little to the utmoſt violence

violence; which continue during three or four days, and you will ſee the *Receiver* continually full of white fumes; but when the red drops begin to appear, ceaſe the Diſtillation and let the Veſſels cool; for 'tis a ſign that the *Vitriol* begins to be deprived of all the Spirit it had, theſe red drops being the Cauſtic part of it.

Note that if you continue the Fire twelve days and nights, the *Receiver* will be found continually full of a white miſt: you muſt alſo obſerve that *Vitriol* throughly dried in the Sun will yield its Spirits ſooner becauſe it is finer and more Spongy, than that which is dryed at the Fire, which is more compact and retains its Spirits more obſtinately; when your Veſſels are cold, unlute your *Receiver* with wet Linnen, and pour out all that it contains into a body, unto which you muſt preſently adapt an *Alembick* with a *Receiver*, Luting all the joynts exactly, that the Volatile Spirit may not fly away; ſet your Body in *Balneo Mariæ*, and diſtil with a very gentle heat the Volatile, Sulphureous and ſweet Spirit, and when you have ſeparated three or four ounces, change the receiver, that no Phlegm may come over into it; preſerve this Spirit in a good Viol very exactly ſtopped. Fit too another *Receiver*, and augment the Fire till the *Balneum* do boyl; by this means the Phlegm will riſe, and you muſt continue the fire till no more come; ſo the *Acid* Spirit will remain in the Body, which

cannot riſe with the heat of the boiling Bath. Pour that which remains into a *Retort*, and ſet it in a Sand-*Furnace*, and fit a *Receiver* thereto, and diſtill about half of this *Acid* Spirit, which will be clear as Rock-water. You may either reſerve and keep apart that which remains in the *Retort*, or changing the *Receiver* puſh on and encreaſe the Fire, and make it all diſtil over and keep theſe two Spirits ſeverally.

The Volatile Spirit, the ſweet *Sulphur* which riſes firſt is very penitrant, and eſteemed very effectual againgſt the falling Evil. Its Doſe is from 12 drops to one Dram, in any appropriate Liquor. The Phlegm is proper for inflammations of the Eyes, and to temper the *Acrimony* of *Eriſipela*'s, and to cleanſe Wounds and Ulcers.

The firſt Spirit that aſcends next after the Phlegm, is very *Diuretick* and *inciſive*, and much uſed in hot and malignant *Fevers*; it reſtores the Appetite, and opens all obſtructions, the Doſe is augmented or decreaſed according as its acidity is more or leſs agreeable with compliance to the Patients taſt.

The laſt Spirit is improperly called the Oil of *Vitriol*, and is no other than the weightier and more Cauſtique part of the *Acid* Spirit; it is principally uſed for diſſolving Metals and Minerals.

The fixed Salt of Vitriol.

PUT that which remains in the *Retort* after your diſtillation, which will be a Maſs as black as a Coal, into an Earthen Veſſel, and pour Rain-water thereon by little and little, for if this Maſs be not a while expoſed to the Air, it will when it comes out of the *Retort* do the ſame thing as quick Lime: continue ſo to pour Water thereon, till it riſe four or five fingers height above it, after ſet it in an earthen Pot to digeſt in hot Sand for ſeven or eight hours, ſtirring the matter often to promote the *Solution* of the Salt, after Filtre and Evaporate the *Solution* till a film riſe thereon, and let it ſhoot into Cryſtals; pour off and Cryſtallize the Water alſo which ſwims on the firſt Cryſtals, and continue to Evaporate and Cryſtallize it till it be all cryſtallized. Theſe Cryſtals are reddiſh at firſt, but being dried and brought into Powder, they are as white as Snow. This Salt is nigh in its effect to Vomitive *Vitriol*, but its Doſe is leſs, only from 8 to 20 Grains.

You may after all proceed to ſweeten the Earth which remains in the Filtration, and make uſe thereof with aſſurance for to ſtay the immoderate Fluxes of the Belly, and ſpitting of Blood, and to dry and heal up

Wounds and Ulcers, and in like manner to mix with *Stiptique*-Ointments and Plaſters.

Sulphur of Vitriol.

PUT into a Glaſs-Body two pounds of purified *Vitriol*, and one pound of the Filings of Steel mingled together, pour upon them diſtilled *Vinegar* to the full of one Fingers height, ſet an Head on the Body, and place it in hot Sand, and fitting a *Receiver* thereto, give it a ſmall Fire at the beginning to make all the moiſture riſe by little and little; after augment the Fire from degree to degree, till you have made the Sand red hot; when your Veſſels are cold take out, and powder what remains in the bottom of the Body, and digeſt it in a *Matrace* with freſh diſtilled *Vinegar*: ſurmounting the matter three or four Fingers height, in *Balneo Mariæ* for three days; then you will find the *Menſtruum* coloured, which decant off, and put again new *Vinegar* upon your matter, and digeſt it a new, and decant and reiterate the ſame operation until your *Vinegar* be tinged no more; then Filtre all the decanted Liquor, and pour thereon good Oil of *Tartar*, a ſufficient quantity to precipitate all the *Sulphur* of *Vitriol* to the bottom, which you muſt afterwards ſweeten with warm Water, and then

then dry it. This is a good Remedy for the *Aſthma*, and for the diſeaſes of the Breaſt. Its Doſe is from five to twelve Grains in any Pectoral Conſerve or Confection.

There are ſome who pretend to make thereof a *Laudanum* without *Opium*, and prefer this Remedy above it, but experience hath given us to know the difference betwixt this *Sulphur* and its effects, and thoſe of *Opium* duly prepared.

CHAP. XVI.

Of Cryſtal of the Rock.

Cryſtal, and all Stones generally, as well Precious and Tranſparent, as common and Opacous, have hard and unmalliable bodies, coagulated, and hardned by the forcible action of a Salt and Stone-generating Spirit. Their different colour, hardneſs, and purity, ſpeaks only the difference of the Womb wherein they were produced. But our principal deſign being to ſhew their preparation, we will here teach that of *Rock Cryſtal*, which will ſerve for other Stones of the ſame nature.

The Tincture of Cryſtal.

MAke your *Cryſtal* red hot in burning Coals, and quench it in a Baſon full of Water, in which it will fall to pieces, ſo that it may eaſily be brought into impalpable Powder; of which take four ounces, and of Salt of *Tartar* purified one pound, and put them well mingled into a great *Cruſible*, which being empty to two third parts, cover it with its cover; place it in a Wind-*Furnace*, and give it a ſmall Fire at the beginning, leſt the matter ſhould riſe and run over the *Cruſible*, but when it begins to fall again, augment your Fire by little and little to the higheſt violence, and ſo continue till the matter diſſolve, and become clear as Oil, and tranſparent as Glaſs; which you may know by putting into the matter a little Rod of Iron, unto which ſome ſmall part thereof cleaving will ſerve you for a proof; and when it is very tranſparent caſt it into an hot Mortar, and it will congeal immediately: beat it into Powder whilſt it is yet hot, and divide it into two parts, and put one half thereof quite hot in a clean, dry, and hot Body, and put thereon good rectified Spirit of Wine by little and little to the height of four fingers, then put upon this another

Bolts-

Bolts-head ſo to make up a circulating Veſſel; Lute well the joynts, and ſet it in hot Sand, and digeſt it ſo that the Spirit of Wine may boil for three or four days and nights continually: your Spirit of Wine will fill it ſelf with the Tincture, and having decanted that off from the matter, put new to it, and proceed as before, and continue to put to new, digeſt, and decant, till the Spirit draw no more colour: then Filtre all the Tinctures and diſtill them with a Glaſs-*Body* and Head in *Balneo Mariæ*, and draw off three fourth parts, and it ſhall be as good Spirit of Wine as before, and the red Tincture will remain in the Body, which you muſt put in a Viol, and cloſe it well.

Note that this Tincture is made better, if you take River-Pibbles, which are coloured within with red, green, and blew veins; both theſe tinctures open all Obſtructions of the Body: They are ſerviceable in *Melancolick* and *Hypocondriac* diſeaſes, for the *Dropſy*, and *Scurvy*. The Doſe is from ten to twenty drops, in White-wine, or ſome other Liquor, uſing them continually.

The Liquor of Cryſtal.

PUT your other half of your diſſolvable Glaſs of Cryſtal which you reſerved in a Glaſs Plate, and expoſe it in a Cellar or other moiſt place, and in a few days it will be diſſolved into a Liquor, which being Filtred through Cap-Paper, will be clear as Rock-water; this Liquor is very *Diuretic*, given from 20 to 30 drops in any agreeable Water or Decoction.

Note that if you put upon this Liquor any Acid Corroſive Spirits, they will both together in a moment be converted into a dry, and ſufficiently hard Maſs.

Magiſtery of Cryſtal.

TTake one pound of the aforeſaid Liquor, and put it into a *Body* with five or ſix pounds of Diſtilled Rain-water, after pour thereon good Spirit of *Nitre* drop by drop: this Spirit will cauſe a great *Ebullition*, be-it works upon the ſaline part contained in this Liquor, and the Salt at the ſame time by a certain counterworking joyns it ſelf with the

the Spirit, and takes from it its Corroſiveneſs; ſo that the ſubſtance of the *Cryſtal* is precipitated to the bottom in a fine and Snow-white Powder, which you muſt ſweeten well and dry.

This *Magiſtery* is very proper to ſtrengthen the *Stomach*, having a virtue to deſtroy the acidity of humours, and to ſweeten them, and hinder their fervour which cauſeth an appetite, you may take a Dram in Wine after food.

Note, that if you Evaporate and Cryſtallize the firſt and ſecond *Lotions* of this Powder, you may extract thence very fair and good *Salt-peter*, which proceeds from the incorporating of its Spirit with *Salt-Alkali* of *Tartar*.

CHAP. XVII.

Of Coral.

THere are divers Salts of *Coral* differing one from another in colour and hardneſs, of all which the red is the beſt, which muſt be choſen of a good red, well compacted and ſhining: it is diverſly prepared, and may ſerve for a model to *Pearls*, *Crabs-eyes*, and ſuch like. We are nevertheleſs obliged to give notice, that better effects are to be expected from theſe

theſe ſorts of Stones reduced only on a Marble to an impalpable Powder, than when they are corroded by *Acid* Spirits, and precipitated with Salts; for Nature knows very well of her ſelf to make theſe kinds of diſſolution in Man's body; and as the *Acid* Spirits loſe their *Acrimony*, and ſweeten themſelves by working on theſe Bodies, we may believe that Nature makes the ſame operation in our Stomachs, when they are opreſſed with any *Acidity*, which is the cauſe of many diſeaſes.

Salt of Coral.

Coral being a body ſofter than *Cryſtal* needs. neither be Calcined nor quenched as Pibbles, for ſo ſoon as you put it in the Fire it becomes white and loſes its fair Tincture, which is very Volatile, and wherein conſiſts a part of its good properties, and virtues. We muſt therefore be contented to reduce it into an *Althool*, or impalpable Powder, and to put four ounces thereof into a pretty large *Bolts-head*, and to pour thereon very good diſtilled *Vinegar*, to four fingers height; a great *Ebullition* will ariſe preſently by the working of the diſtilled *Vinegar*, and counter-working of the *Coral*, for which cauſe it is neceſſary that the *Bolts-head* be large, that nothing may be loſt. The working being over, place the *Bolts-head* upon hot Sand for twenty

twenty four hours, at the end whereof you ſhall find the *Vinegar* changed in an almoſt Inſipid Liquor. Its Acidity being deſtroyed by its working upon the *Coral*; decant this Liquor into ſome Veſſel, and pour freſh diſtilled *Vinegar* on the *Coral*, and repeat the ſame Operation as before until the *Coral* be almoſt all diſſolved, and there remain in the bottom an undiſſolvable earthineſs in a ſmall quantity: Filtre the *Solutions* firſt mingled together, through Cap-Paper, and Evaporate them to drineſs in a Glaſs-*Body* in *Balneo Mariæ*.

Unto Salt of *Coral* is attributed a virtue to purify the maſs of Blood, and it is given to the Sick in Melancholy caſes. The Doſe is from 6 to 20 Grains in ſome convenient Liquor.

Magiſtery of Coral.

DIſſolve the *Coral* as we have now ſaid, with diſtilled *Vinegar*; but inſtead of Evaporating away the *Solution*, inſtil thereon drop by drop good Oil of *Tartar* made by *Diliquium*, and you ſhall ſee immediately the *Coral* precipitated to the bottom of the Water in a very white Powder, which muſt be dulcified by many waſhings. It is ſerviceable for the ſame purpoſes as the Salt, but for that it worketh leſs forcibly. Its Doſe is greater, it may be given to the weight of one Dram.

The

The Tincture of Coral.

MAny have imagined that they knew how to draw the Tincture of *Coral*, and almoſt all Authors have given us thereof preparations as true as *Eſop's Fables*. For many would draw this Tincture with Spirit of *Oak* Wood, ---- of *Guiacum*, *&c.* Others with the Spirit of the Cruſts of Bread, and ſuch like: and having ſet the Coral to digeſt in theſe *Menſtruums* (which rectified are clear as Water) becauſe they are exalted by the digeſtion, by reaſon of a Salt Volatile *Sulphur* which they contain, ſeeing the colour red in the *Menſtruum*, without conſidering that the digeſtion had given it this colour, as well alone as without *Coral*; they took the ſhadow for the ſubſtance, and a forreign Tincture for the *Coral*. Others amuſe themſelves with a Calcination of *Coral*, either alone or with *Nitre*: but the *Coral* remained white, and loſt its Tincture with the leaſt heat of the Fire, which they regarded not at all; but this notwithſtanding they forbore not to put a good Spirit of Wine upon the Body, which by digeſtion, and the help of a fixed Salt of *Nitre*, with which the *Coral* was Calcined, is exalted and becomes red, as the Tincture of the Salt of *Tartar*. By ſuch or ſuch like means ſome

ſome imagine they may obtain a true Tincture of *Coral*, to which without reaſon they attribute ſurpriſing effects. I could yet give the Reader many more examples to keep him from relying on many ridiculus receipts, but I content my ſelf with this one word by the way: And as I pretend not to put any Preparation in this little Treatiſe, of which I have not made trial with my own hands, I will here give forth my manner of a Tincture of *Coral*, which ſeemes to me reaſonable and true.

Take four ounces of good red *Coral*, which make into a ſubtle Powder and mingle with like quantity of *Salt Armoniac*, ſublimed three times with *Decrepitated Salt*, as we have taught you in the *Chapter* of *Salt Armoniac*. Put this mixture into a ſmall *Body* and *Head*, ſet it on a ſmall *Sand-Furnace*, and fit a *Receiver* to them, Lute well the joynts of the Veſſels, and give a ſmall Fire at the beginning, augmenting it by little and little, you ſhall firſt ſee a Volatile Urinous Spirit ariſe, which will ſeparate it ſelf from the fixt *Sea-Salt*, which Volatile Salt is contained in the Flowers of the *Salt Armoniac*, and which fixed Salt joyns and incorporates it ſelf with the Earthly ſubſtance of the *Coral*; after that this Volatile Spirit, which is ſmall in quantity, ſhall have aſcended and paſſed into the *Receiver*, you ſhall ſee the Flowers riſe and ſtick to the head of the *Alembick*, and upper part of the *Body*, which will be tinged with

divers colours as red, green, blew, very pleaſant to behold, and contain in them the true Tincture of *Coral*; the Earthly part of the *Coral* white as Snow, remaines in the bottom of the *Body* with the fixt *Sea-Salt*, which contained the Flowers of the *Salt Armoniac*, continue a moderate fire (for a great heat needs not for this operation) untill no more riſe: The whole Operation may be done in a few hours: Then let the Veſſels cool, and gather diligently what is Sublimed, and put it in a *Bolts-head*, and pour upon it a good Spirit of Wine to the height of four fingers, digeſt this ſome days in *Balneo Mariæ*, and it will be filled with a very red Tincture, and will rob the Flowers of all their pretty colours which they had before, for they remain in the bottom of the *Bolts-head* white like the Flowers of *Salt Armoniac*. Filtre the Tincture, and draw from it three fourths by an *Alembick* in *Balneo Mariæ*, and the Tincture will remain perfect in the bottom of the *Body*, which muſt be kept in a well ſtopt Viol.

This is a Sovereign Remedy to ſtrengthen the Bowels, in opening Obſtructions, it purifies the Blood by Sweat and Urine. Its Doſe is from 6 to 24 drops in ſome convenient Liquor.

Another

Another Tincture of Coral.

THe Tincture of *Coral* which we here diſcover is in uſe among many, and though it be not a true tincture of *Coral*, but rather an exaltation of the *Sulphur* contained in the Spirit of Wine which is uſed for the *Menſtruum*, and is exalted rather by the fixed *Sal Nitre*, wherewith the *Coral* is Calcined, than by the Tincture in the *Coral*, we will not forbear to give you a deſcription thereof.

You muſt take one pound of Powder of good red *Coral*, and two pounds of *Salt peter* purified, mingle and grind them together in a Mortar, after put this mixture in an Earthen Pot that con endure the Fire, ſet the Pot amongſt coals in a *Wind-Furnace*, which you muſt kindle gently at firſt, that the matter be hot by little and little, and that the ſudden violence of the Fire cauſe not the pot to break at firſt, but when it is red hot you muſt continue a pretty violent Fire the ſpace of ſix or eight hours: then let the Veſſel cool and break it, and powder the Snow-white Maſs which you will find therein; put this into a long-neck *Bolts-head*, and pour thereon a good Spirit of Wine to the height of four fingers, and ſet the *Bolts-head* in digeſtion in Sand for two in days, which time the Spirit of Wine will

be filled with a red Tincture, which muſt be poured off, and new Spirit of Wine put thereon, and the digeſtion continued in hot Sand, and again pour more off and on, till the Spirit of Wine be no more tinged. Then take all the Tinctures together, and put them into a *Body* of Glaſs, with and *Head* and *Receiver* well Luted, diſtill off all your Spirit of Wine with a very gentle heat, there will remain in the bottom a yellowiſh Powder approaching towards a red, of a lixiviat taſt. The Spirit of Wine drawn from it it may be reſerved for the ſame or other uſes; but the Salt which remains in the bottom of the *Body*, muſt be ſet in a Cellar with the *Body* open. The reddiſh Salt will be diſſolved by attracting a moiſture to it into a reddiſh Liquor, which muſt be kept in a Viol for uſe, which is this; Take two pounds of good *Spaniſh* Wine, and an ounce of the ſaid Liquor, and mingle them in a Glaſs Bottle well ſtopped, and let them ſtand together in a cold place for the term of eight days; the *Spaniſh* Wine which was white will become red as Blood.

This Tincture is given to purify the Maſs of Blood for the Falling-Sickneſs, for to ſtrengthen the Stomach, and to cleanſe away all *Viſcoſities*, from half a Spoonful to a good great Spoonful every morning faſting, and continuing the uſe of it for ſome time.

CHAP

CHAP. XVIII.

Of Quick-Lime.

Quick-lime is made of Pibbles or common Stones by a Calcination in a *Furnace*, and is practiſed by Peaſants themſelves, it furniſhes us with external Remedies, and amongſt others the Water whereunto they have given the name of the *Corroſive Water*, and the *Salt* or *Cauſtick Stone*, which we will deſcribe, not inſiſting upon many other preparations well or ill founded, and little in uſe.

The Eating, or Corroſive Water.

TAke two pounds of good *Quick-Lime*, well Calcined and newly made, put it into a great Earthen Veſſel, and pour thereupon by little and little ten pounds of Rain-water, and leave them together for two days, ſtirring them often, after let the *Lime* ſettle, and decant the Water which ſwims above and filtre it, and put it into a large Glaſs Bottle, and put to it one ounce of Powder of *Corroſive Sublimate*, which will change from white to yellow, and deſcends to the bottom of the Veſ-

ſel: of this Water being ſetled, you may make uſe to mundifie Wounds and Ulcers, to conſume the ſuperfluities therein, and chiefly for *Gangrenes*, and in theſe caſes the expert Chirurgion may add thereto on occaſion, a fourth or a third part of the Spirit of Wine; the ſame thing may be obſerved in the diſeaſes of the Eyes, and it may be tempered with appropriated Waters, and ſometimes with Rain-water, as the Artiſt thinks fit. The Calx which remains in the Veſſel may be ſweetened, dried, and kept for all outward diſeaſes which need *Deſiccation*.

The Cauſtic Stone.

TAke one pounds of *Quick-lime*, and two pounds of *Pot-aſhes*, beat them together into powder, and Calcine them in a convenient Pot in a Potters *Furnace*, after make a Lye with them and Fountain, or River-water, which Vapour away till it be dry, and there will remain a very ſharp Salt. This you muſt put into a good *Cruſible*, and melt it in a *Wind-furnace*, and when it is well melted, caſt it into an Earthen Baſon, as in the *Mineral Cryſtal*, and after break it into little pieces whilſt it is yet hot, and put it into Vials well ſtopped with Wax; for otherwiſe theſe Stones will diſſolve by attracting the moiſture of the Air. The uſe of this *Cauſtic Stone* is too well known for me to inſiſt upon it.

CHAP.

CHAP. XIX.

Of Arſenick.

Arſenick is a Mineral fuliginous and partly inflammable, as common *Sulphur*: there are three ſorts of it, the firſt white which keeps the name of *Arſenick*; the ſecond yellow, named *Orpiment*; the third red, called *Realgar*, or *Sandarack*; there is no difference in their preparation, that of the white will ſuffice for all. The principal preparations of this Mineral are, *Regulus*, *Cauſtic Oil*, Liquor, and fixt powder which are uſed outwardly with happy ſucceſs, and ſome are bold to make uſe thereof inwardly, which I adviſe not, becauſe nature furniſheth us with other Remedies enough, leſs dangerous, and more ſafe.

Regulus of Arſenick, *or* Orpiment.

BEat into powder one pound of *Arſenick* (or *Orpiment*) with ſix ounces of *Pot-aſhes*, and mix them with one pound of ſoft *Soap*, put them

them into a good large *Cruſible*, covered with another *Cruſible* with an hole pierced through the bottom, through which the venomous Vapours may paſs away; ſet this *Cruſiole* in a *Wind-Furnace*, and give it a little Fire at the beginning, ſtill augmenting it by little and little, till the matter be melted, when the matter is well melted caſt it into a deep picked Iron, *Cornet*, *Cone*, or *Ingot*, made hot and anointed with Wax and let it cool, you will find a ſmall *Regulus* in the bottom, grained almoſt like the *Antimonial Regulus*.

Oil, or Corroſive Liquor of Arſenick.

BEat into Powder equal parts of *Regulus* of *Arſenick* and *Corroſive Sublimate*, put them into a ſmall *Retort*, place it in Sand, and give a gradual Fire, and force over a gummy Liquor, which will diſtil like Butter of *Antimony*; this Liquor hath the ſame properties with that of *Antimony* but it is more violent. When the *Butter* is raiſed chang your *Receiver*, and encreaſe the Fire a little, to make the *Mercury* come over, which diſtils into the *Receiver* alive and running; for the Spirits which held it before in the form of a *Cryſtalline Salt*, forſake it and betake them to the *Regulus* of *Arſenick*.

Tee Fixt Liquor of Arſenick.

BEat and mingle one pound of *Arſenick* with two pounds of *Salt-peter*, melt them in one or more large *Cruſibles* leaving of each one third part empty by reaſon of the great *Ebullition*; and for the ſame cauſe the Fire at the beginning, and for two hours muſt be moderate, but when the *Ebullition* ceaſes, augment and continue the Fire till the matter ſmoak no more, and till it be liquid like Oil in the bottom of the *Cruſible*: Then caſt it into an hot Mortar, and when it begins to cool beat it to Powder, and expoſe it to the moiſt Air that it may diſſolve into a Liquor, which Filtre and keep in a Vial. It is uſed againſt malignant Ulcers, from the *POX*, *Cankrous* or *Fiſtulate*, and it is mixt with proper Waters to diminiſh its force.

CHAP. XX.

Of Sulphur.

Sulphur is a Reſine, or earthly Greaſe, mingled with an *Acid* and *Vitriolick Salt*. There are two ſorts of it, the one they call quick

quick, which is ſuch as it comes out of the Earth; the other is common yellow *Sulphur*, which is taken out of the firſt by melting, or elſe out of Mineral-waters, from whence it is ſeparated by Evaporating their humidity. You muſt make choice of that which is made up in ſmall Rols being yellow, inclining towards green, caſting a fair clear blew flame, that goes not out, and leaves no earthineſs behind it. Its internal uſe is principally for the Diſeaſes of the Breaſt. It is alſo uſed againſt the *Plague*, becauſe it reſiſts putrifaction, and outwardly to reſolve Tumors, to heal the *Itch*, *Scabs*, *Tetters*, and other external Maladies. It is diverſly prepared.

Flowers of Sulphur.

TAke a *Body* of good Earth, ſet it in a *Furnace* with an open Fire, yet ſo that it be encompaſſed well with Clay and Bricks, ſo that the Fire may neither appear nor breath out on high, but only through Holes or Regiſters, and the neck of the *Body* muſt be above the *Furnace*: Make a little Fire at firſt, that it may heat the bottom of the *Body* by little and little: afterwards put thereunto half a pound of powdered *Sulphur*, and immediately fit an *Head* to your *Body* without Luting it, and encreaſe your Fire one degree;

gree; and when you ſee the *Alembick* begins to fill with Flowers, be careful to continue your Fire in the ſame degree, for if the Fire be too hot the *Sulphur* that is already Sublimed will melt and fall down, and if the Fire be not ſtrong enough, the Flowers cannot riſe; when the Head is ſufficiently full of Flowers, take it away, and at the ſame time ſet another in its place, and gathering out the Flowers empty this Head that it may be ready to ſet in the place of the other when it ſhall be full; and when you judg that your half pound of *Sulphur* is almoſt Sublimed, put another half pound into the *Body*, and continue your work with a regular Fire, changing your Head from time to time, collecting the Flowers, and putting new *Sulphur* in the *Body*, till you have a ſufficient quantity of Flowers; and continue the Fire till there remain in the *Body* nothing but a very ſmall quantity of light Earth. Note, that all the *Sulphur* riſes in Flowers without any ſeparation of any thing, ſave a little light Earth in very ſmall quantity; ſo that this Sublimation is not properly a Purification but a Rarification only, whereby the *Sulphur* is divided into very ſmall particles, more diſſolvable in their *Menſtruums* and more eaſy to mingle in Compoſitions, and more proper to be uſed in the Maladies of the Breaſt. The Doſe of the Flowers is from 10 to 40 Grains, in a New-laid Egg, or any Confiture, Opiate, Extract or Conſerve.

The

The Acid Spirit of Sulphur.

THE greateſt part of theſe who have attempted any thing in Chymical Operations have imagined that they could draw from *Sulphur* an *Acid Spirit*, not only in great quantity, but eaſily, and that by ſeveral Inſtruments which every one invented ſeverally for his own uſe; but when their pretended *Acid Spirit* is well examined, it is found to be nothing but Phlegm, or a Spirit of *Sulphur* made with *Salt-peter*. The true and moſt eaſy method is this.

Provide a large well baked Veſſel of gray Earth, in the midſt whereof ſet a little Earthen Diſh with the bottom upwards, and thereon place another more large, which muſt be of good Earth, and which will endure the Fire well, in which there is a pound of melted *Sulphur*, put into this *Sulphur* ſome burning Stone Coals, ſuch as are thoſe of *Liege*, to kindle it, and cover the Earthen Veſſel with a Bell Glaſs, either hanging on a Cord or ſupported by three ſmall pieces of Glaſs, for the brim of the Bell-Glaſs muſt not touch immediately the Earthen Veſſel, but muſt have the diſtance of a Fingers thickneſs round about, that the *Sulphur* may burn continually and not go out, and the ſmoaky fumes of the

Sulphur

Salphur may exhale, ſo that the Spirituous *Acid Salt* of *Sulphur*, may be rarified and diſſolved into Liquor, and cleaving to the Bell, fall down thereupon drop by drop, into the Earthen Veſſel. When the *Sulphur* is conſumed put in more, and ſo continue this work till you have ſufficient. Note, that you muſt moiſten your Bell at firſt, and work this in a moiſt time, between the two *Æquinoxes*, if it may be. The properties of this Spirit differ not from thoſe of the Spirit of *Vitriol*; ſome believe them to be more ſpecifick againſt the *Plague* it ſelf. It is given in Julips, and other Liquors to the degree of an agreeable ſharpneſs.

Milk, or Magiſtery of Sulphur.

TAke four ounces of Flower of *Sulphur*, two ounces of *Salt of Tartar*, and ſix pounds of Rain-water, put them all into a Stone-Pot, and boil them in a *Sand-Furnace* five or ſix hours; in this time the *Sulphur* will be diſſolved and the Liquor become red; Filtre it warm, and mingle it after it is filtred, with Water five or ſix pounds more, afterwards pour upon it by little and little ſome good diſtilled *Vinegar*, or other *Acid* in its ſtead; the Liquor will be immediately turned into *Milk*, and the *Magiſtery* will be pre-

precipitated by little and little to the bottom of the Veſſel, decant off the Liquor which ſwims above, and ſweeten the Powder by many waſhings with hot Water, after dry it and keep it.

The uſe of this *Magiſtery* is like that of the Flowers, but the Doſe is leſs, becauſe it is more open; and five Grains of this Powder avail more than ten of the Flowers, and ten Grains of the Flowers more than twenty Grains of common *Sulphur*.

Balſom of Sulphur.

PUT into a *Bolts-head* two ounces of Flowers of *Sulphur*, and pour thereon eight ounces of Oil of *Turpentine* well rectified, ſet your *Bolts-head* on Sand, and give it a ſmall Fire at the beginning, and encreaſing by little and little till your *Sulphur* be diſſolved, which will be done in four or five hours in a ſufficiently moderate heat: the Oil of *Turpentine* will be tinged with a Ruby colour, and will diſſolve all the *Sulphur*; but whilſt the Veſſel cools, one part of the *Sulphur*, which the Oil cannot hold up in its liquid form, reincorporates or congeals again. You muſt pour out that which is clear and red into a Viol, and keep it well ſtopt.

This Oil cures the Ulcers of the *Lungs*, it is good againſt the *Plague*, and againſt all contagious Diſeaſes, both to heal and preſerve from

them. Its Doſe is from 5 to 15 drops in ſome convenient Liquor. An excellent Oil for outward uſes may be made with Oil of *Linſeed*, inſtead of Oil of *Turpentine*, and this Oil is incomparable both for healing *Contuſions* and *Ulcers*, for it is an *Anodine* and ſweetens the *Acrimony* of humours.

CHAP. XXI.

Of Ambergreece.

Ambergreece is a ſort of Balſom, riſing from the bottom of the *Sea* altogether liquid, but it is congealed and hardned by the coagulative Spirit of the *Sea-Salt*, and Rays of the Sun, it is commonly found on the *Indian* Sea-ſhore. It is not always of an equal goodneſs, nor of the ſame colour, which proceeds from the leſſer or greater impurities it meets with in its congelation. The beſt is gray inclining to yellow, of a ſweet and fragrant Odor, and melting eaſily in heat. *Ambergreece* is one of the nobleſt works of Nature, and needs no great preparation, producing ſuch as it is unprepared great effects, both for ſtrengthening the Heart, Stomach, and Brain, and for refreſhing the Vital and Animal Spirits. But its Bituminous quality hindering it from mixing eaſily with watery Liquors, we to obtain our deſign therein and reduce it to an *Eſſence* as follows. *Eſſence*

Eſſence of Ambergreece.

TAke two Drāms of good *Ambergreece*, and one Scruple of good *Levant* Musk, powder them well, and put them into a *Bolts-head*, and pour on them four ounces of good Spirit of Wine, fit to your *Bolts-head* another leſſer, Lute well the joints, and ſet it to digeſt in Horſe-dung moderately hot for ſome days, then whilſt it is yet hot pour off the tinged Wine, for this *Eſſence* congeals of it ſelf, and melts again with the leaſt warmth of the hand: It augments Seed, and makes man or woman capable for Generation; it is taken from 10 to 15 drops in *Spaniſh* Wine, or Meath, or other Liquor.

CHAP. XXII.

Of Karabe, *or* Amber.

K*Arabe* uſually called *Yellow Amber*, or *Succinum*, is a Roſin or Bitumen very pure and well digeſted, which diſtills out of the Veins of the earth into the Sea, where it is hardned by the congelative Spirit of the *Sea-Salt*; there are of it ſeveral ſorts, of which the white is beſt, next to it the yellow, and the black after the yellow. It is uſed in Powder without other preparation, for *Catharres*, *Gonorrhea's* and *Whites*; but reduced into Oil, and Volatile Salt, it obtains thereby very great virtues, as we ſhall after ſhew. *Diſtil-*

Diſtillation of Amber.

TAke three pound of Amber groſly beaten, put it into a large Retort, leaving it half empty, ſet it in a ſand-Furnace, and fit thereto a large Receiver; lute the joynts very exactly, and give it gradual heat: there comes over firſt a Phlegm, then a Spirit, and after an Oyl and volatile Salt mingled confuſedly: Encreaſe and continue the Fire till nothing more come over, then let all cool, and take away the Receiver; you will find in the Retort a black matter like *Aſphaltum*: poure into your Receiver about two pound of hot water, and ſhake it well together with all the ſubſtances found in it, to the end that the volatile Salt ſticking to the ſides of the Receiver or mingled in the Oyl may be diſſolved therein: after pour all out into a glaſs Viol, and ſeparate the Oyl from the Water, containing in it the volatile Salt and ſpirit of Amber.

The Rectification of the Oyl of Amber.

MIngle the Oyl ſeparated from the other matters, with ſo many ſifted aſhes as will ſuffice to drink it up, and make a pretty dry maſs;

then put this maſs into a Retort, and diſtill it in a pretty gentle fire: the firſt Oyl that comes over will be pretty fair and clear, you muſt keep it apart for internal uſes: continue and encreaſe the fire by little and little to raiſe your red Oyl; when no more comes over, ceaſe your fire, and keep your Oyls ſeverally. The firſt is excellent againſt the Apoplexy, Epilepſie, Palſie, and all the Diſeaſes of the Mother, and againſt the retention of Urine: its Doſe is from three to ten drops, in any proper Liquor: the red Oyl may be uſed in Unguents and Plaiſters; it fortifies the Nerves, and diſſipates Swellings; and it is with good ſucceſs rubbed into Paralytick Members.

The Sublimation and Purification of the Volatile Salt of Amber.

TAke the aforeſaid Liquor ſeparated from the Oyl, which contains in it the Phlegm, Spirit, and volatile Salt of Amber; filtre it, to ſeparate the oily ſubſtance the better from it: and put it into a Bolts head with a long neck, and pour thereon drop by drop good Spirit of Salt, which will cauſe a great boyling up in the glaſs, becauſe of the action it hath upon the volatile Salt of Amber; for this Salt is nigh to the nature of the volatile Salt of Animals: when the ebullition is over, put the Liquor into a Body, and cover it with an head, and diſtilling it in a ſand-Furnace, draw off the inſipid water; for the

the volatile Salt of Amber hath by re-action killed the acidity of the Spirit of Salt, and abides with it in the Stills bottom: after all the inſipid water is come over, augment your fire one degree, to cauſe your Salt to ſublime, which riſes and cleaves partly to the head, and partly to the top of the body of your Still. Let your Veſſel cool, and gather carefully the volatile Salt, which will be very ſubtle and penetrant, and will have the taſte of ſublimed *Sal armoniac*. But to make it yet more ſubtle, you muſt mingle it with equal quantity of pure Salt of Tartar, and put this mixture in a ſmall body and head, and ſublime it in a ſand-Furnace, and the Salt of Tartar will retain with it all the ſpirit of Salt which was united and incorporated with the Salt of Amber in the firſt ſublimation: and this Salt thus re-ſublimed will be very pure and white as Snow, and muſt be kept in a Viol, very exactly well ſtopped, for it is ſo penetrant and volatile, that it cannot be long kept without much trouble.

Both theſe Salts are uſed againſt all Obſtructions in the Body, againſt the Palſie and retention of Urine, and againſt the Jaundies; it evacuates ſtrongly by Sweat and Urine; The Doſe of the former is from 20 grains to a dram, but the ſecond (which is purified to an higher degree) is given only from 4 to 15 grains, in ſome agreeable Liquor.

We will here finiſh the Section of Minerals, being aſſured that thoſe who well underſtand the proceſs of the Preparations which we have deſcribed, will be capable of an infinite of others which we thought not pertinent to be mentioned.

SECTION II.

Of Vegetables.

NOw that we have ſhewn the preparation of Minerals, in the moſt clear manner that poſſibly we can, we now prepare to do the ſame in Vegetables, intire, or in parts, ſuch as are, Roots, Wood, Barks, Roſin, Gum, and other Excreſcences, Leaves, Flowers, Seeds, and Fruits: and albeit the Family of Vegetables be extended almoſt to an infinity, we will be content by ſufficient Examples to ſhew all their principal Preparations; and that we may proceed therein orderly, we will begin with Roots, which are the inferiour part of Plants, and we will riſe from thence gradually to their tops. All Vegetables, whole or parts, may be reduced by Fire into their five diſtinct Subſtances; but in regard this cannot be done without leaving bad impreſſions on their Spirits and Oyls, Artiſts have found out other ways, and have contented themſelves by means of ſome *Menſtruums* to draw out from them what is beſt, and not to amuſe themſelves in an exact ſeparation of all their parts, of which the moſt are unprofitable.

CHAP.

CHAP. I.

Of Jalap Root.

Jalap is a root the Ancients knew not, which comes from the *Indies*. It ought to be weighty, in colour betwixt gray and black, and reſinous veins ought to appear in it when broken, it is of a ſharp and biting taſte. But its principal virtue conſiſts in its Reſinous ſubſtance, which is ſeparated, as follows.

Put eight ounces of powdered Jalap into a bolts-head, and pour thereon good Spirit of Wine to the height of four fingers above it, cloſe it well, and ſet it to digeſt in *B. M.* for two or three dayes; in the mean time the Spirit of Wine will be tinged of a violet colour, decant it off into another Veſſel, and pour on freſh Spirit of Wine, digeſt and decant as before, and do this the third time; then mingle and filtre all the tinctures, and put them into a great glazed earthen Veſſel, and pour thereon three or four pound of pure Water, which will break the Spirit of Wine, and force it to let fall the reſinous ſubſtance of the Jalap, which it held diſſolved, which by little and little precipitates to the bottom and ſides of the Veſſel: pour off the Water into a Body, and draw off the Spirit of Wine by

Diſtillation; it may ſerve as formerly for like occaſions: waſh well the reſine with clean Water, to take from it the odour of the Spirit of Wine, then dry it in the Sun, or with a gentle heat, and when you would uſe it, reduce it into an impalpable Powder. The Jalap which remains is light and inſipid as aſhes, whence the Salt is extracted.

The Reſine of Jalap purges Seroſities, and therefore is uſed with happy ſucceſs in Dropſies, and all Diſeaſes which come of abundance of Seroſities: It's Doſe is from five to fifteen grains, in ſome Conſerve, or Extract made up into a Bolus, or in Powder, with Tartar vitriolate; but the ſafeſt way is to powder this Reſine, and beating it together with Almonds, or the cold Seeds to diſſolve it in an Emulſion thereof, or in the yolk of an Egg in ſome broth, to ſweeten the acrimony of this Reſine, and to divide its parts, and hinder them from faſtning to the Tunicles of the Stomach or entrals: which is many times the cauſe of ſuper-purgations. The ſame precaution may alſo be uſed in the adminiſtration of other Reſinous Remedies taken from Scamony, Agarick, Turbith, and others, whoſe preparations ought to be like this of Jalap.

CHAP.

CHAP. II.

Extract of black Hellebore.

THis Preparation will ſerve for a Model for the Extracts of all other Roots, whoſe principal ſubſtance is a juyce diſſolvable in Water, ſuch as are Mechoacan, the root of Eſula, wild Cucumer, Rhubarb, and others. Take one pound of black Hellebore roots, dry or green, beaten groſly, put them in a Body, and pour on them five or ſix pound of diſtilled rain Water, and cover the Body with a blind Head, and digeſt in hot Sand two days; ſtrain the liquor through a linnen cloth, and ſqueeze the reſidence a little, whereon put freſh water and digeſt as before; after ſtrain, mix with the former, and filtre it, and evaporate it in an earthen veſſel to the conſiſtence of an Extract, which muſt be kept in a Pot well covered.

This Remedy is uſed in all Diſeaſes which come of Melancholy. It is ſeldom given alone, but mixt with ſome Purgative, becauſe taken alone it works violently up and down, but ſo mixed it purges only downwards. The Doſe is from 12 to 30 Grains.

CHAP. III.

The Extract of Angelica, and Conſervation of all its virtue.

PUT ſix pound of good Whitewine on one pound of beaten Angelica root in a Body, cover it with a blind Head, and digeſt it in a vaperous Bath for two or three days, then take away your blind Head, and ſet to an Head and a Receiver, and lute well the joynts; then begin to diſtil with a gentle heat in *B. M.* and continue till you have drawn off about three pounds of Water, which will contain what ever is volatile in the Angelica; keep this Water in a Viol well ſtopped: let your Veſſels cool, ſtrain and preſs ſtrongly out what remains in the Body, and clarifie it by a tongue-filtre, and after evaporate it in a glaſed earthen Veſſel in a Stove-heat of *B. M.* to the conſiſtence of an Extract: calcine what remains in the preſs, reduce it to Aſhes, make thereof a Lye with Filtre, and evaporate to a Salt, and joyn it to the Extract, vvhich keep in a Veſſel vvell ſtopt. This Extract is a true Cordial and bezoarick: it is opening and penetrant, and cauſes Svveat; it provokes the Terms, helps againſt the ſuffocation of the Mother, reſiſts Póyſon, and the Plague, eſpecially if it be taken in its ovvn Water. Its Doſe is from 10 to 30 Grains;

Grains; the Water contains no leſs virtues than the Extract, for it includes the more volatile and noble part of this root.

In this manner you may dravv the Water, Extract and Salt of all Roots, vvhich abound in a ſulphureous and volatile Salt, vvhich may be knovvn by their aromatick and fiery ſcent and taſte: ſuch are the *Valerian*, *Maſterwort*, *Mea* or *Spignel*, the Carluce *Thiſtle*, *Calamus Aromaticus*, *Zedoary*, *Galangal*, and ſuch like.

CHAP. IV.

Of Roſe-wood, or lignum Rodium.

WE will give only two Examples of the preparation of Wood, which may ſerve for all others. The firſt ſhall be of *Lignum Rodium*, or Roſe-wood, which containes two profitable Subſtances, the one Spiritous and Watry, the other Sulphurous and Oyly, and both theſe Subſtances very Sable and Volatile; ſo that they muſt be diſtilled with a *Worm* or *Refrigerant*. The ſecond ſort ſhall be of the Wood *Guiacum*, which contains alſo two volatile ſubſtances, a Spiritous and Oyly one, both which are cloſely united to their Body, and cannot well be ſeparated from it, but by the ſtronger heat of a Retort. For the firſt, chooſe the weightieſt, and beſt ſcented

Roſe-wood

Roſe-wood, raſpe it finely, and put four pound of it with one of *Saltpetre* into an Earthen Pot, and poure thereon ten pound of *Rain-water*, let it ſoak therein eight or ten days, and ſtir it from time to time; by this means the *Saltpetre* will penetrate the Sulphurous parts of the Wood, and diſpoſe them to ſeparate: After, put all with ten pound of water more in a Copper Still, placed in its Furnace, with its Refrigerant and Receiver fitted thereto; lute well the Joints, and diſtill gradually the Spirituous Water and Eſſential Oyle, which come over together confuſedly; and note that this Oyl falls to the Bottom of the Water, contrary to the moſt part of other diſtilled Oyls; continue your diſtillation till your waters come over Taſteleſs, and forget not to refreſh your Refrigerant with change of water many times during your diſtillation; which being ended, decant your Spirituous water from your Oyl, which you will find in the bottom of your Receiver in very ſmall quantity, keep it apart. This Oyl and Water are principally uſed for Perfumes; and not taken inwardly as ſafely, yet they may.

All Wood which hath in it a Sulphurous ſweet ſcented and ſubtle Subſtance, as the yellow *Stantal* or *Sanders*, *Saſſafras* and others, may be diſtilled in the ſame manner.

CHAP.

CHAP. V.

Of Guiacum Wood, *and its Reduction into five different Subſtances.*

THis ſingle Operation will ſhew the Reader the means to reduce Vegetables into Phlegm, Spirit, Oyl, Salt and Earth. Take four pound of the Raſpings of the Wood *Guiacum*, put them in a well luted Retort of gray Earth or Glaſs, ſet it in a cloſe reverberating Furnace, and fit to it a large Receiver unluted, and give it fire gradually, there comes firſt over an inſipid Phlegm, and after a volatile Spirit, which when you perceive by it, a pungent taſte to come, put away the Phlegm into another Veſſel, and keep it apart, and fit your Receiver again to your Retort, and new lute the joints well, that none of the Spirit be loſt, which is very penetrant: neither muſt you preſs it by too ſtrong a fire, for it will either preſs through the joints of the Veſſel or break the Receiver: and in this and all other Diſtillations of Volatile Spirits, the Artiſt had need of Patience and Dexterity, if he will not loſe that he ſeeks for: maintain your fire in a very moderate ſtate for ſeven or eight hours, after encreaſe it by little and little, and continue it till all the Spirit and Oyl be come over: Theſe two Subſtances come over together; but

but after the Veſſels are cold, and the Receiver taken away, they may be eaſily ſeparated: pour all that is in the Receiver into a Tunnel lined with filtring Paper and ſet in a Viol, the Spirit will paſs through the Paper, and the Oyl will remain behind; ſet your Tunnel on another Viol, and making an hole in your Paper let the Oyl run into the Viol, which you muſt keep apart.

The Retort contains but the remains of the Wood reduced to a Coal, which put in an open Veſſel on hot Coals, and burn it to aſhes, from which (as from all other aſhes) you ſhall draw the Salt by Diſſolution, Filtration and Evaporation, as we ſhall teach you where we ſhew the manner of Extracting Salt *Alkali* from Vegetables. After the Salt is ſeparated there remain ſome inſipid aſhes, which they call the damned Earth. The Spirit unrectified will ſerve to waſh Cancrous, Fiſtulate and Corroding Ulcers; but is very biteing, and may be tempered with its Phlegm which came over at the beginning of the Diſtillation. It is rectified in *B M.* with a body, that it may be uſed internally againſt the *Pox*, for it chaſeth out that venom by Urine and Sweat, and ſometimes by inſenſible Tranſpiration: its Doſe is from twenty drops to a Dragm in ſome ſpecifick Decoction: the Oyl is rectified by mingling it with aſhes and putting it in a Retort in a Sand-Furnace, and drawing off a clear Oyl freed partly from its ingrateful ſcent, the aſhes retaining what is more groſs in the ſaid Oyl: It is uſed againſt the *Epilepſie*, to facilitate Womens

Deliverance,

Deliverance, and to bring away the after-Birth. Its Doſe is from three to ſix Drops in ſome Liquor: it may be uſed unrectified to ſcale Bones, to heal old Ulcers and Nodes, and to put with Cotton into rotten Teeth, in which it cauterizes the Nerve and ſo makes it inſenſible of Pain. All Wood, as *Juniper*, *Box*, *Lime-tree* and all the reſt may be diſtilled as *Guiacum*.

CHAP. VI.

Of the Diſtillation of the Spirituous *Water and Eſſential Oyl of* Cinnamon.

WE will addreſs our ſelves (without inſiſting on its Deſcription) to the Separation of the ſpiritous and oily ſubſtance of Cinnamon, whoſe Preparation will ſerve us for example in other aromatick Barks, as of Citron, Oranges, *&c.* As alſo of Nutmegs, Cloves, Pepper and other Spiceries. Take four pounds of Cinnamon of a red colour, ſtrong and ſweet ſcent, of a pungent and a little aſtringent taſte, beat it groſely, and put it into a gray Earthen Pot, pour thereon two pound of rain-water, with half a pound of Saltpetre, to help its Penetration during its maceration, which muſt be for four days, which being ended empty all the matter into a tinned Copper Body, adding thereto twelve pounds of water; place the Still in its Furnace, and fit to it its Refrigerant and Receiver, luteing well their joints: give from the beginning a pretty good fire, to help

help the Oyl to come over with the Spirits, but not too great, that they may not be diſſipated; and this Obſervation is general, that the Sulphurous parts are ſtrongly fixed in the Body of the Spices, and are ſeparated from them with difficulty, but they are alſo eaſily diſſipated after their ſeparation; you muſt therefore diſtill them in ſuch manner that one drop do readily follow another, and continue that degree till the Water which comes over have no more ſtrength: change your Water carefully now and then in the Refrigerant, during the Diſtillation, that the Spirits may the better condenſe and not evaporate: when the Diſtillation is ended, ſeparate the ſpirituous Oyl, which ſettles at the bottom of the Recipient, in very ſmall quantity, for you will hardly draw half an ounce of Oyl from four pounds of Cinnamon, which half ounce contains in it the principal Virtue of all the quantity of Cinnamon whence it was drawn; ſo that one ſingle drop is ſufficient to impregnate a great quantity of Liquor with its Virtue: but to mingle it (as other æthereal Oyls) more eaſily with Liquors, they make thereof a ſugared Oyl, mingling it with powdered Sugar, whereby it being divided into imperceptible parts, they are mixt with the Water, and cannot after be united into an oily Subſtance.

This Oyl provokes the Terms, ſpeeds the Birth, refreſhes the Spirits, ſharpens Digeſtion; it is uſed in Faintings, and the Diſeaſes of the Stomach and Mother, which proceed of a cold cauſe; the Doſe is half a drop in any Liquor. The Water obtains almoſt the ſame properties, but it acts not

not with the ſame efficacy: its Doſe is from one to two Spoonfuls.

Note that other Barks and Spices afford a greater quantity of Oyl, of which the greater part ſwims on the Water, and is ſeparated by a thread of cotton, as we ſhall ſhew in the Diſtillation of Wormwood-oyl.

The reſidence may be dried, and reduced to aſhes, that the *Sal alkali* may be extracted out of it; but as theſe Salts differ not in their Virtues from other ſorts of vegetable *alkalies*, we ſhall not inſiſt at all on their deſcription.

Another Cinnamon-Water.

THey that deſire onely a good Cinnamon-Water, without regard to the oyl, for which a greater quantity of Cinnamon was needful, muſt prepare it as follows. Take four ounces of good Cinnamon well bruiſed, and put it into a Body, and pour thereon Bugloſs, Burrage and Balm-water, *a.* eight ounces, cover the Body with a blind Head, digeſt in a ſlow heat 2 dayes, then put in its place a Head and Receiver, and diſtill till there remain in the bottom of the Still not more than a third of the Waters, which ſhall be emptied of the Spirituous ſubſtance of the Cinnamon. The uſe of this Water is the ſame as the former, but it is more cordial.

The

The Tincture and Extract of Cinnamon.

ALmoſt all Barks contain in them a Reſinous and Sulphureous ſubſtance, which conſtitutes their principal Virtue: to ſeparate this internal Subſtance from its groſs Body, we muſt imploy ſpirituous and ſulphureous *Menſtruums*, ſuch as Spirit of Wine, and other Vegetable burning Spirits: we will give an Example in Cinnamon, which will ſerve for all other Barks. Put four ounces of good well-bruiſed Cinnamon in a Bolts-head, and pour thereon one pound of good Spirit of Wine; fit well another Bolts-head to this, to make a Veſſel for Digeſtion, cloſe well the joynts, and let them digeſt three or four dayes in a gentle heat; the Spirit of Wine will fill it ſelf with the ſubſtance of the Cinnamon, and will tinge it of a fair red; pour off and ſeparate the Tincture, filtre and keep it in a viol well ſtopt.

If you would reduce this Tincture into the form of an Extract, put it in a ſmall Body, and lute well thereto an Head and Receiver, and diſtill off the Spirit of Wine, which will be impregnate with the volatile ſubſtance of the Cinnamon, and the Extract will remain in the bottom of the Body in the form of hony.

The Tincture refreſhes the Spirits, fortifies the Stomach, thins and diſſolves all viſcous matter more

more than the ſimple Cinnamon Water: its Doſe is half a Spoonful in ſome appropriate Liquor. The Extract ſtrengthens the Stomach more than any other Remedy made out of Cinnamon, becauſe it contains in it a part of the fixed Salt, and of the ſubtler Earth, which hath a reſtringent power. The Spirit of Wine drawn from the Extract is impregnate with the Spirit of Cinnamon, and may be mingled in Liquors for the uſe of weak Perſons, for it is very comfortable, and helps Digeſtion.

CHAP. VII.

The Diſtillation of the Ethereal Oyl and Balſome of Turpentine.

WE place the Chymical Preparation of Roſins and Tears iſſuing from the Bodies of Trees, after that of Barks; and begin with the Diſtillation of Turpentine. Put four pounds of Turpentine in a large Retort, whereof three four parts muſt be left empty, place it in a ſand-Furnace, fit a Receiver to it, and begin your Diſtillation with a ſlow Fire: there riſes firſt a volatile Spirit, and ſubtle oyle clear as Rock-Water; but after you have drawn ten or twelve ounces, fail not to empty what is come over into a Viol, and putting to the Receiver again, and

luting the joynts, a yellow oyl will come over, of which you may draw alſo ten or twelve ounces, and empty that apart into a Viol, and then ſetting to the Receiver the third time, and encreaſing the Fire by little and little, the red oyl will come over, which is the Balm; and when it begins to thicken put out your Fire, elſe it will be over-thick, and that which remains in the Retort will be charked, but in caſe you keep no more Fire to it, it will be good clolophonia.

The Watry Spirit mingled with the firſt æthereal Oyl, contains in it part of the volatile Salt of Turpentine, it contains alſo in it an acidity capable of diſſolving Stones; but we will ſpeak thereof more largely in the Chapter of Gum Ammoniac, which aboundeth in this Spirit more than other Tears and Reſines.

The æthereal oyl muſt be ſeparated from the Spirit by a Tunnel: it is uſed in attenuating and diſſolving the Gravel in the Reins and Bladder, it provokes Urine, and helps in Gonorrhea's and Ulcers in the neck of the Bladder: its Doſe is from five to fifteen drops in ſome agreeable Liquor.

The yellow and red Oyl differ not from the former, but their ſtrong ſmell is the cauſe they are not uſed ſave outwardly in ill-thriven Members, Scyrrous Tumours, and old Ulcers.

The *Colophonia* is the more earthly part of the Turpentine, it conſolidates and dryes, its principal uſe is in Plaiſters.

The

The ſame circumſtances may be obſerved in diſtilling Maſtich, Olibanum, Gum Elemmi, Tacamacha, Sandarat, Ladanum, Storax and Benjamin: but this laſt, in that it abounds in a volatile Salt which ſeparates with the leaſt heat of Fire, we will handle apart in a particular Chapter.

CHAP. VIII.

Of the Sublimation of the Flowers of Benjamin, *and Diſtillation of its Oyl.*

PUT four ounces of good Benjamin in a pot glazed within, and having a Rabet or Creſt, and fit thereto a picked Coronet, or Cone of Paper well glued together, and a Foot high, whoſe opening muſt be proportionable to the pots mouth, that it incloſe it, and be tied with a pack-thread round about the Creſt or ledge of the pot; which place on a ſand-Furnace, and give it a ſmall Fire; for this ſulphureous and ſubtle Salt riſes eaſily when the Benjamin begins to melt; continue the Fire in the ſame degree, and about half an hour after looſe the coronet or cone, and gather the Flowers with a feather which are riſen, and nimbly ſet a freſh cone or coronet in the place of this, which you muſt keep

in readineſs for that end when you remove the firſt, and continue the ſame Fire, and change again your cone or coronet, and gather the Flowers every half hour, till you obſerve that the Flowers begin to turn oily, then ceaſe your Fire, and gather and keep your Flowers carefully.

Theſe Flowers are given in Diſeaſes of the Lungs and Breaſt, and to them that are Aſthmatick: The Doſe is from four grains to ſix in any Conſerve or Loſenge.

CHAP. IX.

Of the Diſtillation of Gum Ammoniac.

THis Gum is produced by a ſort of Fern (*ferula*) which they call the Ammoniac-bearer, to diſtinguiſh it from the other ſorts, which produce *Galbanum*, *Sagapenum*, *Opopanax*, and *Euphorbium*, in all which Gums the ſame method of operation may be obſerved, which differs not from that of Roſins and Tears; but theſe ſorts of Gums are filled with plenty of volatile Salt and Spirit, wherefore we handle them apart.

Take one pound of good Gum Ammoniac in drops, and put it into a great Retort, ſo that three fourth parts thereof may remain empty, for aſſoon as it begins to melt with heat, it puffs up greatly,

greatly, fit to it a large Receiver, and lute the joynts exactly, and proceed gradually in your Diſtillation. An oyl comes over, and plenty of Spirit, and that which remains in the Retort, is mightily rarified, black as a cole, and of no value. Separate the Spirit from the Oyl by a tunnel lined with paper, as you are taught above.

The Spirit poſſeſſes very great Virtues, which proceed onely from the volatile Salt which is contained in it. But in that it is mingled alſo with an Acid, which hinders its activity, and diminiſhes its Virtue, I will give you the means to ſeparate theſe two Spirits capable to produce very different effects. Take one ounce of Coral, or Crabs eyes, or other ſtony matter in powder, and having put them in a Retort large enough, pour upon them eight ounces of this Spirit, ſet your Retort in a ſand-Furnace, fit unto it a large Receiver, and lute the joynts exactly, after give it a very ſmall fire, that the acid Spirit may by little and little be applyed unto the Coral, which will retain it till the ſulphureous Spirit be diſtilled over into the Receiver, and riſes firſt of all; but afterwards there aſcends a ſtinking phlegm which muſt not be mingled with this Spirit, and may be diſtinguiſhed by its picquant taſte; which ſo ſoon as you perceive to ceaſe, take away the Receiver, empty what is in it, and keep it carefully in a well-ſtopped Viol. This is a great Remedy for purifying the maſs of the Blood, to heal the Scurvy, and cure all Obſtructions: it is uſed alſo againſt the Palſie inwardly, and the

Oyl outwardly, mingled in Unguents: It is alſo a Specifick againſt the Plague, and all Diſeaſes ariſing from putrefaction: its Doſe is from ſix to twenty drops in ſome proper Liquor.

The Oyl reſolves and ſoftens the Scirrhus and hardneſs of the Spleen, diſſipates Nodes, and is uſeful in the hyſterick Paſſion: and all theſe good effects proceed from its volatile Salt, with which it is intimately mingled.

CHAP. X.

Of the Preparation of Aloes.

Aloes is a very bitter juyce which they bring us from *Arabia*, in a ſolid Form in skins. The more impure is called Caballin, the mean ſort is called Hepatique, and the beſt is called Succatrine, which ought to be neat, glittering, and of an high and lively colour, and of this you are to make uſe. Its principal Virtues are to purge gently Phlegm by ſtrengthening the Stomach, to kill Worms, and reſiſt Corruption. It is purified by diſſolving it in diſtilled Waters, or in juyce of Roſes, Violets, or other, and after filtring and coagulating it, as we here teach. Take and put half a pound of Aloes Succatrine in a glaſs Body, and pour thereon one pound and an half of juyce of

of Violets, put on a blind Head, and ſet it in digeſtion 48 hours, in which time the Aloes will be diſſolved in the juyce, and if there be any earthy part therein, it will ſink to the bottom; decant the Solution, and filtre it, after that evaporate it in a glazed diſh over a vaporous Bath, and reduce it into a maſs. Of this you may make Pills of the weight of ſix or eight grains, of which take one half an hour before Supper, to looſen the Belly ſweetly, and to evacuate (almoſt inſenſibly) the gravel and viſcous matter in the Stomach: there are made of it alſo ſmall Pills of the bigneſs of a Pins head, which they call Pills of *Frankford*: this maſs is termed *Aloes violata*, as that diſſolved in juyce of Roſes is called *Roſata*.

Extract Panchymagogon.

AFter that of Aloes, we will inſert here the Extract *Panchymagogon*, which is commonly the baſe of all purgative Extracts, becauſe this Preparation may ſerve for example to all the other compound Extracts.

Take the pulp of *Coloquintida* ℥jſs, Agaric, Scamony, *a.* ℥j, black Hellebore ℥ij, Powder of *Diarrhodon Abbatis* ℥ſs, Aloes ſuccatrine ℥x. Bruiſe the black Hellebore, chop the pulp of Coloquintida, put them together into a Bolts-head, and

pour upon them good Spirit of Wine, to four fingers height, ſtop well the mouth of the Bolts-head, and in another put the Powder of *Diarrhodon Abbatis* apart, and pour thereon alſo Spirit of Wine to the ſame height; chop alſo the Agaric, and bruiſe the Scamony, and put on them an excellent Spirit of Wine, which may extract their Roſinous ſubſtance; keep the Aloes apart, and put the three Bolts-heads well ſtopt in digeſtion on hot aſhes for three dayes, during which the *Menſtruums* will fill themſelves with the inward Virtues of theſe groſſer Subſtances; decant off the Tinctures each apart in a ſeveral Viol, and put new *Menſtruums* on the matters remaining in the Bolts-heads, and ſet them again to digeſt, ſo the *Menſtruums* will draw out whatever of good there is in them: after mingle all your Tinctures of Hellebore, Diarrhodon, and Coloquintida, and put the Aloes thereto which you kept apart, and digeſt them in a ſlow heat for eight hours, and your Aloes will be diſſolved, ſave only ſome earthy part; filtre your Solution through Paper, and the Tinctures of Agaric and Scamony, and ſet them all together in *B. M.* in an Alembick well luted with its Receiver, and diſtill off about 3 fourth parts of the Spirit of Wine, which may ſerve again for the ſame uſe; empty what remains in your Alembick into a glazed earthen diſh, and proceed to evaporate it in *B. M.* to a conſiſtence fit to be made into Pills.

This is a very good purgative, and evacuates ſweetly what is ſuperfluous in the Body: its Doſe is from 5 to 30 grains.

It

It may be made ſpecifick for Venereous Diſeaſes by adding thereto one third part of *Mercurius dulcis*.

CAAP. XI.

Of the Preparation of Opium.

Opium is condenſed Poppy-juyce: the beſt comes from *Thebes*, and is drawn by ſlaſhing the Poppy heads when they are almoſt ripe, and this is much to be preferred above the juyce which is wrung forth by the Preſs from the whole Plant, which is called *Meconium*: but the firſt being very rare, we make uſe of the other, which muſt be choſen black, compact of an offenſive ſmell, and ſoporiferous, ſharp and bitter in taſte, flaming at the Fire, but not with a black flame, diſſolvable in Water, and its ſolution muſt be brown and not yellow, and being broken it ought to glitter within. Its eaſieſt and beſt Preparation is this: Cut it into very thin and ſmall ſlices, and ſpread them on a broad earthen glazed diſh, and ſet them on a ſmall-coal fire, and ſtir the *Opium* frequently, which grows ſoft at firſt, and after hardens by little and little; the fire muſt be continued till it may be crumbled betwixt the Fingers; in the *interim* the hurtful fumes

fumes of it muſt be avoided, which proceed from the Narcotick, ſtinking, and malign Sulphur of *Opium*. Put your *Opium* thus torrified into a Bolts-head, and put thereon diſtilled *May-dew*, four fingers high, ſtop the Bolts-head, and ſet it in Digeſtion in *B. M.* four days, in that time the *Menſtruum* will be filled with the beſt ſubſtance of the Opium, and will have a reddiſh brown Colour; pour off the Tincture into another Veſſel, and put on freſh diſtilled dew on the remaining matter, to compleat the Extraction of what purity it hath; after filtre the whole, and evaporate it in *B. M.* to the conſiſtence of an Extract; by this means you ſhall obtain a well-prepared Opium, diſcharged of all its Narcotick Sulphur and Earthineſs, which you may uſe in occaſions wherein it is commonly employed.

Its principal Virtues are to pacifie irritated Spirits, to provoke ſleep, to ſtay the immoderate fluxes of the Belly, to ſweeten the acrimony of Humours: it is uſed after general Remedies againſt defluxions on the Breaſt, againſt hyſterick Diſeaſes, to appeaſe the torments of the Gout, and other internal pains, taken by the mouth, and applied outwardly; the doſe is from half a grain to two grains.

Authors give divers deſcriptions and preparations of *Laudanum*. Some prepare Opium with Vinegar, or other acids, but acids having a contrariety to the internal ſulphureous volatile and ſaline part, which gives unto Opium its principal virtue, they wholly deſtroy it; others make an Extract with the Spirit of Wine, which they after-

ter-

terwards draw off by Diſtillation; But inaſmuch as the Spirit of Wine doth mingle it ſelf intimately with the particles of the *Opium*, which agree with its ſulphureous nature, and carry them away with it in the Diſtillation, that which remains in the bottom is nothing but an earthly ſubſtance, deprived of all its principal virtues; this happens not in the uſe of dew, which is a light and ſubtle *Menſtruum*, which evaporates with the gentleſt heat, without taking away any thing of the virtue of the Body wherewith it is mixed. Therefore I recommend to the Reader this ſimple Preparation, of which he may make uſe as of a good *Laudanum*, which may be made Specifick againſt the riſings of the Mother by addition of a drop of Oyl of Amber, and againſt other Diſeaſes by commixture of proper Remedies, or agreeable Vehicles.

CHAP. XII.

Of Leaves and their Preparations.

LEaves and Stalks of Plants contain in them divers Subſtances, as other parts, and differ not onely in their natural mixture, but in this alſo, that one or other principle is predominant in the one or the other: and this obliges us to give thereof

thereof ſundry Examples, to make known the diverſity of their Preparation, according to their divers predominant principles. Firſt, we will treat of thoſe which abound with Phlegm, and are almoſt inſipid; ſuch are the Purſlane, the Lettuce, Pellitory of the Wall, Garden-Nightſhade, &c. Secondly, thoſe which contain much Phlegm, with a tartarous Salt, (which gives them an acrid taſte) which have no ſcent; of which ſort are the ſeveral kinds of Sorrel, and ſuch like. In the third place, thoſe which have a bitter taſte, and abound with a nitrous and tartarous Salt, and have no ſcent, as Carduus, Succory, Hops, Fumitory, &c. In the fourth place, thoſe which abound in a volatile ſulphureous Subſtance, ſubtle and airy, as are Marjoram, Roſemary, Sage, Time, Organy, and an infinity of others. We will give you five Examples which will ſerve in general for drawing from all Plants whatever of good they contain.

CHAP. XIII.

Of Lettuce.

LEttuce and other herbs which are nigh thereunto in their nature, do readily yield what good they contain, when their leaves are full of juyce, and ready to ſhoot up into ſtalks. Beat then

then a good quantity of them in a Marble Mortar, and preſs out the juyce from them ſo ordered, let it ſtand for ſome hours, that the more groſs parts may ſettle, pour off the more clear into a glaſs Body, and if you have ten pounds of juyce, diſtill thence ſix pounds of Water in a ſand-Furnace, which will be much and incomparably better than that which the greater part of covetous and ignorant Apothecaries draw with addition of ſtore of Water, in a braſs Refrigerant, which cannot but have the very hurtful qualities which it draws from the braſs, and it were better to give Fountain, than ſuch Water unto the ſick.

Take the juyce which remains in the Body, and put it through a cloth-ſtrainer to clarifie it, and evaporate it to the conſiſtence of a Rob, whereto you may add a little Sugar to keep it the better: you may make uſe of this Rob diſſolved in its own Water, and thereof compoſe ſomniferous and refrigerating Remedies for Cholerick Diſeaſes: Its Doſe is from one to two drams in five or ſix ounces of its own Water: theſe Juleps are better than thoſe wherein they mix many ounces of Syrups, whoſe Sugar may cauſe new fermentations.

Another

Another Diſtillation of Lettuces, and other juicy Herbs.

THe great uſe of diſtilled Waters hath forced the Artiſts to invent a ſort of tinned Cauldron, large and flat, whereon they ſet an head of fine Pewter fitted to the Cauldron, of which, and its Furnace, we will here give you the plaineſt deſcription we can poſſibly.

Cauſe a brick Furnace to be built, ſquare without, and round within, of about two foot Diameter above, with four holes and Regiſters at the four corners, an aſh-hole, grate and hearth, and made from the grate up to the top taper like a basket, for the better governing the fire: your Furnace being thus framed, cauſe a Cauldron to be made of iron plates, of a flat bottom, and of the height of ſix or ſeven inches, with a ſmall bordure of a breadth proportionable to the Diameter of the Furnace, ſo that it joyn not wholly to the walls of the Furnace, that the heat may be communicated quite round: place alſo two iron bars croſs the Furnace, about eight or nine inches above the grate, to ſupport the iron Cauldron, which you ſhall ſet in the Furnace, and lute it round about to the Bordure, ſo that the top of the Furnace, ſave the four Regiſters may be all faſt and cloſed; this being done, prepare alſo a Caul-

Cauldron of Copper tinned, flat in the bottom, and proportionable to the wideneſs of the iron Cauldron, ſo that it may be ſet within it without touching its ſides at the diſtance of half an inch: this Cauldron needs not be above eight or ten inches high: in this Veſſel we put the herbs to be diſtilled; this Cauldron muſt have an head of Pewter, of a flattiſh round top fitted to it, and when you would diſtill any herb, firſt put ſand to the height of an inch and an half in the iron Cauldron, then ſet your Copper Cauldron upon the ſand, and fill it almoſt quite up to the top with whole leaves, cover it with its head, fit to its Receiver, and give fire by little and little, till the Water diſtill drop by drop, and then keep that degree, till all the moiſture of the leaves reduced into vapour be condenſed into Water, and that the leaves be ſo dry that they may be powdered: ſo you ſhall draw a Water impregnate with the ſmell and virtue of the Plant; for the ſand interpoſed hinders the violent action of the Fire, which otherwiſe would burn the Herbs too much, and cauſe the Water to taſte of burning. This Inſtrument is not only proper to draw Water off from all juycy Herbs (except the acid) but alſo from Flowers, as Roſes, Lillies, Water-lillies, wild Poppies, and others. The Herbs which remain after the Water is drawn off, may be burnt to aſhes, and the Salt extracted; but being that Plants contain little Salt, or none at all, till they attain their perfect maturity, that is, in the time betwixt their Flower and Seed; we adviſe not to

ſeek

ſeek for fixed Salt in tender Herbs. This Inſtrument with its Furnace is repreſented in the third Table.

CHAP. XIV.

Of the Diſtillation of Sorrel.

BEing that all Sorrels abound in Phlegm and eſſential acid Salt, we will ſhew the way to ſeparate theſe two Subſtances. Take a good quantity of Sorrel, whilſt yet all its virtue is in its leaves, and draw from it the juyce, and let it ſettle one day, that its groſs impurities may fall to the bottom; pour off the clear into one or more Glaſs bodies, and diſtill off about two third parts in *B. M.* ſtrain the juice which remains in the bottom of the Body, through a cloth-ſtrainer to purifie it; then put it into a Body, then draw off the ſuperfluous moiſture in *B. M.* till that which remains in the bottom come to the conſiſtence of a Rob: then put the Glaſs body in a cellar for ſome dayes, and you will find part of the juyce turned into a Salt figured like Tartar; decant the Liquor off which ſwims on the top, and dry the eſſential Salt; Let this Liquor evaporate a little more in a cellar again, and part of it will again be chryſtallized into

into Salt, which put to the former: and being this Salt is alſo mixed with impurities, diſſolve it in its own Water diſtilled, filtre and cauſe it to evaporate, and chryſtallize as before, and you ſhall have the eſſential Salt of this Plant, wherein its principal virtue conſiſts; this Salt opens the obſtructions of the Liver and Spleen, it reſts putrefaction, quenches thirſt, recovers the Appetite, ſtrengthens the Stomach; it is uſed with good ſucceſs in Fevers: its Doſe is from 20 grains to a dram, in its own Water, or Broth. If you pleaſe you may evaporate the juyce to the conſiſtence of an Extract, which hath almoſt the ſame Virtues.

CHAP. XV.

Of the Bleſſed Thiſtle.

THe Bleſſed Thiſtle, and all other ſorts of Thiſtles, with Fumitory, Succory, and ſuch like, which have almoſt no ſcent, and are of a bitter taſte, approaching towards a ſour, contain ſtore of Phlegm, and a nitrous eſſential Salt; and we will ſhew the ſeparation of theſe two ſubſtances, rejecting the reſt as of little profit.

Having ſtore of the Bleſſed Thiſtle when it is ready to ſhoot out its ſtalk, pound it in a marble

Mortar, and juyce, ſettle, and diſtill it, as we have taught in the laſt Chapter, and you ſhall have a Water which ſhall have all the properties attributed to this ſort of Water. The juyce which remains in the bottom muſt be clarified, and evaporated to the conſiſtence of an Extract; or if you will make its eſſential Salt, you muſt proceed as you did with Sorrel, and your Salt will come near in taſte to Nitre, but it will not be ſo tranſparent, for it will alwayes retain ſome black clammineſs from its Extract, which may be ſeparated, and it is purified by Solution in its proper Water, by filtering it through paper in a Tunnel wherein a few of its aſhes were put; and then evaporating it till a film riſe on the top, and placing it in a Cellar to chryſtallize, you ſhall have a Salt that doth altogether reſemble Salt-petre in ſhape and taſte, and caſt on hot coals it burns like Salt-petre. They who deſire only the *Carduus*-Water, may diſtill it in ſand from the leaves, in the Inſtrument which we have deſcribed, whoſe figure is in the third Table, and they ſhall obtain an excellent Water, indued with greater Virtues than that drawn by *B. M.* for the ſtronger heat of the ſand makes a part of the volatile Salt riſe confuſed with the phlegmatick Water, and makes it more virtuous. The virtue of the eſſential Salt is great in hot Fevers, and contagious Diſeaſes, for it caſts out forcibly the venom from the centre by ſweat: The Doſe is from 6 to 30 grains.

CHAP.

CHAP. XVI.

Of the Diſtillation of Creſſes.

THe juicy Herbs which contain ſtore of ſulphureous and volatile eſſential Salt, ſuch as are Creſſes, Brook-lime, Chervil, Scurvy-graſs, and infinite others of the ſame nature, may be diſtilled and reduced into an Extract, or eſſential Salt, after the ſame manner as the Plants we now treated of: but inaſmuch as their principal virtue conſiſts only in a ſpiritual and fiery ſubſtance, we will here teach the means to ſeparate it. Take a great quantity of Water-creſs when it begins to flower, which is the time when they are in their greateſt force, and delay not till they be fully flowered, nor till they begin to dry, for then their whole virtue is concentred in their Seed, wherein the Spirits are encloſed, and cannot eaſily be thence extracted, as may be done whilſt they are yet in their Leaves; waſh the Creſſes very clean, and beat them in a marble Mortar: and note that you muſt have at leaſt forty pound of this Herb, for if you have not a ſufficient quantity, the fermentative Spirit cannot be brought out of power into act, and the Plant would ſooner rot or grow acid than ferment; put a ſufficient quantity of powdered leaves in-

to a Barrel opened only on one ſide, and pour thereon Water ſo hot as you can endure with your hand without ſcalding, double quantity to that of the Leaves, and mingle them well together with a ſtaff: cover it on the open part immediately with double clothes, to keep in the ſpirits the beſt that poſſible may be; and leave it ſo for half an hour, or a little longer, then put to it thrice ſo much more Water as you did at firſt, ſo that there may be about five times ſo much Water as Leaves; but this latter Water muſt be cooler than the former: put thereto at the ſame time about three or four pounds of Beer-yeaſt, and ſtir all together with a ſtaff; cover your Barrel immediately very exactly, which muſt be above half full, and ſet it in a temperate place, but rather hot than cold; for great cold hinders the action of the internal Spirits of things: you ſhall ſee that three or four dayes after, the whole groſs ſubſtance of the Herb will be riſen on the top of the Liquor in the form of a curd or cruſt; take good heed at this time, that aſſoon as you ſee this material ſubſtance or cruſt begins to break, and fall or ſink, you be in readineſs to Still off the whole before the Spirit vapour away: put the whole into a great Strong-water-ſtill of Copper, and diſtill at firſt with a gradual and gentle fire, all the Spirit, which will be mingled with much Phlegm, for this reaſon you muſt rectify this Spirit with the Inſtrument deſcribed in the firſt Figure for rectifying Spirit of Wine, and by this means you ſhall clear it quite from its phlegm, and you ſhall have a

Spi-

Spirit very pure and combuſtible like that of Wine.

The Spirit of Water-creſſes, and all other Antiſcorbuticks, generally do reſolve and volatilize all fix'd and tartarous matters; they may be given not only in the Scurvy, but in all Diſeaſes which proceed from the corruption of the Blood, which they purifie and ſubtilize by their penetrative power more than any other Remedy. Their Doſe is from twenty grains to a dram, in ſome convenient Vehicle.

CHAP. XVII.

Of the Diſtillation of Wormwood.

ALL odoriferous Plants, ſuch as are Wormwood, Time, Marjoram, Sage, Roſemary, and infinite more, may be fermented in the ſame manner as Creſſes; but their principal virtue conſiſts in a ſulphureous and ſubtle Subſtance which ſwims upon the Water; we will teach to draw and ſeparate it. Take a good quantity of the tops of Wormwood, betwixt Flower and Seed-time, which is the ſeaſon of the perfection of Aromatick Plants; cut them ſmall, and beat them in a Mortar of Marble, put them into a Veſſel of tinned Copper, and pour upon them a good quantity of Water, that the Wormwood

may be well mixed therewith; fill not your Veſſel above half, cover it with its Refrigerant, or Mores-head, then give fire gradually, but after the drops begin to fall, raiſe the fire roundly, ſo that one drop may almoſt overtake another, and continue the fire at that rate till the Water that comes over be as it were inſipid: you ſhall find in your Receiver ſtore of a ſpirituous Water, whereon will ſwim a little Oyl, which you muſt ſeparate from the Water in the manner following: Fill your Receiver up to the mouth, and bind a ſmall Viol with a pack-thread to its neck, then put a little wick of Cotton into the ſmall Viol, and at the ſame time dip the other end of it in the Oyl which ſwims on the Water in the Receiver; the Wick will at the ſame time draw into it the Oyl, which following the Wick will drop into the little Viol; a little Water muſt from time to time be put into the Receiver, ſo that the Oyl may continually riſe and touch the brim of the Receiver, and continue this till all the Oyl be ſeparated, which keep in a Viol well-ſtopped.

Theſe Oyls contain in a manner all the virtues of the Plants whence they were drawn. The diſtilled Waters alſo after the ſeparation of the Oyls, retain ſtill ſome good Virtue, and they may be preſerved to ſerve upon occaſion.

CHAP.

CHAP. XVIII.

The Preparation of the fixed Salt, or Alkali *of* Wormwood.

IN treating of Leaves we will ſhew the Preparation of their fixed Salt; and we will take Wormwood for a general Example. Gather a great quantity of Wormwood, cut cloſe to the Root, when it is in its greateſt ſtrength, clean it well, dry it in the ſhade, then burn, and reduce it into aſhes: make lye of it with hot Water, and put new hot Water on the aſhes, till the Water hath extracted all the Salt into it ſelf; caſt away the remaining unprofitable aſhes, (only you may if you pleaſe make teſts with them,) filtre the lye and evaporate it to dryneſs; you will find in the bottom of the Veſſel a grayiſh Salt, which will be very fiery, but it contains yet in it much impurity, wherefore it muſt be yet farther calcined in a Crucible with a violent fire, and ſtirred continually in the *interim* with an iron *Spatula*, that it may not melt, and keep it quite red for the ſpace of a good hour, then let it cool, and diſſolve it in rain Water, or its own diſtilled Water: filtre the Solution, and evaporate it till it be dry, you will have a Snow, white as Snow,

which muſt be kept in a Viol well ſtopt, elſe it reſolves into Liquor by the moiſture of the Air.

The principal virtues of Salt of Wormwood, and generally of all others, is to open Obſtructions, to attenuate groſs, and cut tough, and evácuate corrupted matters: they are Diuretick and Diaphoretick, and the Doſe is from ten to thirty grains in ſome broth or proper Liquor.

CHAP. XIX.

Of Flowers.

ALL Flowers are either without ſcent, as Water-lilly, or have a ſuperficial, as Jeſſamine, Violet, *&c.* or a ſtrong aromatick ſmell, as Roſe, and Roſemary-flowers, *&c.* thoſe that have no ſmell may be diſtilled and purified into an Extract, as we have taught in the thirteenth Chapter: thoſe that have a ſleight and ſuperficial ſcent, cannot bear the leaſt heat without loſing their ſcent and colour; for this cauſe the Chymiſts have found a means to preſerve the ſcent of theſe ſorts of Flowers, by ſtratifying them with Cotton imbibed with Oyl of *Ben*, which Oyl being ſufficiently impregnated with the odour of the Flowers, is ſeparated from the Cotton by expreſſion; but for that this manner of operation is well known to all Perfumers, we ſhall not inſiſt thereon.

on. Flowers which have an aromatick ſcent, may furniſh Phyſick with ſundry Remedies: for Example, Roſes may be diſtilled in the ſame manner as Leaves and Herbs, by *B.M.* or ſand, in the Inſtrument which we have deſcribed in the thirteenth Chapter; they may alſo be fermented like Creſſes, and reduced into a very odoriferous burning Spirit; an Oyl may alſo be drawn from it, which ſwims on the Water in the ſame manner as that of Wormwood; we refer the Reader to the Preparations we have deſcribed above, according to which they may work not only on the Roſe, but on all ſorts of odoriferous Flowers. Odoriferous Flowers are alſo diſtilled ſometimes with addition of ſome *Menſtruum* which may heighten and augment their virtue; ſo we proceed in the preparation of the Queen of *Hungaries* Water, in the manner following.

The Queen of Hungaries *Water.*

PUT two pounds of Roſemary-Flowers, gathered in the morning in a dry ſeaſon, into a Glaſs-body, and pour thereon three pounds of good Spirit of Wine; cover the Body with a blind head, lute the joynts well, and ſet it to digeſt in a vaporous Bath by a very gentle heat for 24 hours, or in the Sun for three dayes, then take away the blind head, and put another with

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a ſpout in its place, and lute well the joynts, and diſtill in *B. M.* all that will riſe, and you ſhall have a very excellent Water: And though its Virtues are ſufficiently known, we will here relate the principal, which are to fortifie the Brain, either taken by the Mouth or Noſe, and rubbing it in by the Temples, and ſutures of the Head; to ſtrengthen the Stomach, help digeſtion, diſſipate the Cholick-pains, and to preſerve from them, by taking half a ſpoonful in warm broth, continuing the uſe thereof for ſome dayes, or twice a Week at leaſt: it helps againſt Deafneſs or noiſe in the Ears, either taken by the Mouth, or drawn up into the Noſtrils, or put into the Ears with Cotton; as alſo for the pains in the Head, for all Contuſions external, or deep penetrating internal, taken as above, or chafed in from without; it is alſo very proper for Palſies, Apoplexies, Gouts and cold Pains, and for all Heart-burnings, Palpitations and Faintings, either taken inwardly, or applied outwardly to the Stomach, with a Toaſt ſoaked therein; and it is generally proper (on all occaſions wherein it is needful) to ſtir, ſtrengthen, quicken, and preſerve natural Heat.

CHAP.

CHAP. XX.

Of Fruits.

THe principal virtue of Fruits is in their juyce; we will teach the Preparation thereof, and chuſe for example the Juyce of the Vine, and whatever comes from it, Wine, Vinegar, Tartar. And to begin with Wine, we ſay that it is the juyce of Grapes, called Muſt at firſt, and after fermentation containing in it ſtore of Spirit, which by its own proper virtue reduces it ſelf from power into act, and in its fermentation is changed from Muſt into Wine, and preſerves it ſelf a long time in that eſtate, till ſuch time as its Spirit, become very volatile by its fermentation, is partly evaporated: and when this Spirit, which contains in it the mercurial, ſulphureous, and more ſubtle part, hath left the Wine, that which remaineth ſoures, and is called Vinegar: which notwithſtanding that it is deprived of its principal Spirit, is yet preſerved a long time, by that great quantity of fixed Salt which remains in it. We might here inlarge upon all the changes that happen unto Muſt, till it become Vinegar; but ſince many Authors have treated largely of Fermentation, we will remit thither the Read-

Reader, and ſpeak here onely of the Preparations of Wine, Vinegar, and Tartar.

Of the Diſtillation of Wine.

PUT ſixty quarts of Wine into a Copper-body, and cover it with a Refrigerant, or Moreshead, and diſtill off therefrom about a ſixth part, or continue your Diſtillation till no more Spirit riſe, which comes alwayes firſt over in all Fermented and Vinous Liquors; put this Spirit into a Bottle, and ſtop it well. This firſt Spirit thus prepared, is called *Aqua Vitæ*, that which remains in the Body may be evaporated to the conſiſtence of Hony, and put in a Retort, and thence may be drawn, firſt, a phlegmatick Water, ſecondly, a Spirit, and thirdly, a ſtinking Oyl: and that remains in the Retort may be calcined, and reduced into aſhes, from which the fixed Alcalizate Salt may be drawn and ſeparated from the dead Earth, in the ſame manner as from other Vegetables. I was willing to put down this operation rather for the ſatisfaction of the curious, than for any profit that may be made of it.

Rectification of the Aqua Vitæ *into* Spirit *or* Alcool.

THe *Aqua Vitæ* being mingled with ſtore of Phlegm, which it raiſes with it in the firſt diſtillation, we muſt rectifie it two or three times, till it be reduced to a pure Spirit; it muſt be put into a Body of glaſs, and diſtilled thence to half, in *B. M.* which half muſt be rectified again once, twice, or ſo often till it be wholly freed from its Phlegm, which is thus known; if ſome of this Spirit being fired in a Spoon, burn all away without leaving any moiſture behind, or if it burn and reduce unto aſhes, a little cotton put therein: but the better tryal is, if when it is conſumed it fire a grain of Cannon-powder put in the ſpoon whereon the Spirit was poured, which is a ſign no humidity is left in the Spirit, for it would have hindred the firing of the Powder: But becauſe this rectification of the Spirit is troubleſome, and beſides, great quantities thereof are needful to be had for Chymical Preparations, Artiſts have invented an Inſtrument, by which they might rectifie the Spirit of Wine by one ſingle Diſtillation, and for that we remit the Reader to the Figure which we have given in the firſt part of this Book. We need not much trouble our ſelves to make known the excellency of this

this Spirit, the uſe whereof is ſo frequent, both inwardly and outwardly, that none are ignorant thereof: beſides this, it is uſed in infinite Chymical operations, to draw Extracts, or ſubtle ſulphureous Subſtances, as well from Vegetables as Animals and Minerals.

Spirit of Wine Tartarized.

THe Spirit of Wine tartarized is no other thing than the Spirit of Wine purified to an higher degree, and wholly freed from its Phlegm, by means of Salt of Tartar, which retains with it all that phlegm which the Spirit of Wine may yet contain in it; Take one pound of Salt of Tartar well dried, put it into a Body, and pour thereon four pounds of good Spirit of Wine, ſet to an Head and Receiver, lute well the joynts, diſtill the Spirit in *B.M.* which will leave all its phlegm behind in the Salt of Tartar; and therefore it is very proper for all uſes internal and external, working with much greater force than the common Spirit of Wine, becauſe of its greater purity; this Spirit is much employed for many brave *Arcana's* prepared with it, and eſpecially in the Extraction of Tinctures. This hath alſo excited many Artiſts to proceed farther, and to ſeek out how to reduce this Spirit into a volatile Salt, by a farther ſeparation of its ſuperfluous aquoſity, accor-

according to what *Van Helmont* hath delivered in his Treatiſe intitled *Aura Vitalis*, where he ſaith that one pound of Spirit of Wine imbibed in the fixed Salt of Tartar, affords but one half ounce of Salt, and that all the reſt is nothing but an inſipid Water; but whereas many curious Perſons have buſied themſelves to ſtay this Salt contained in the Spirit of Wine, with the Salt of Tartar; according to the words of this excellent Philoſopher (who in this and many other things hath ſpoken obſcurely) finding no ſucceſs therein, have thought it impoſſible; experience hath made me ſee the poſſibility thereof, and having by means of a corroſive Spirit my ſelf many times reduced the Spirit of Wine into a volatile Salt, I ſhall here very willingly impart the manner thereof as follows. Put a pound of Spirit of Nitre well dephlegmed, into a long-necked large Globe or Ballown-glaſs, and pour thereon ſome drops of the Spirit of Wine tartarized, and at the ſame time ſet on a Bolts-head fitted to the neck of the Globe or Ballown thereon, cloſing well the joynts; there will ariſe at the ſame time an action of thoſe Spirits whereby they will deſtroy one another; which when it ceaſes, pour on ſome more freſh drops of the Spirit of Wine, and continue this ſame Work for a whole day, ſtill cloſing well the mouth of your Glaſs whenſoever you drop on your Spirit of Wine, until ſuch time as the action ceaſe: you will have a Liquor of a middle nature, betwixt a Spirit of Wine and Spirit of Nitre; for it is not corroſive, and its force exceeds not that of diſtilled Vinegar, and it burns not

not as the Spirit of Wine: Put this Liquor into a Body with an Head fitted thereto, and diſtill with a very ſlow heat of a vaporous Bath whatever will come over: there will remain in the bottom a white and volatile Salt in a ſmall quantity, of an acid and ſour taſte, which may be ſublimed, and deprived of its corroſive and acid part, by the help of ſome Salt Alkaly, in the ſame manner as we have taught in the Sublimation and Purification of the volatile Salt of Amber. I thought it worth my pains to add this operation to the rectification of the Spirit of Wine, hoping that many curious Perſons will be well pleaſed to underſtand it.

CHAP. XXI.

Of Vinegar.

WE call all Liquors Vinegars which have paſſed Fermentation to a degree of corruption; for ſo long as fermented juyces are in their perfection, as good Wine, Cider, Beer, Meath, *&c.* they contain in them a volatile inflamable Spirit, but when this Spirit in proceſs of time is vaniſhed, the tartarous vitrioline Salt comes to be predominant, and turns them into an

an acid Liquor which we call Vinegar. We treat here onely of Wine-vinegar, as moſt imployed in Medicine.

Diſtillation of Vinegar.

PUT five pounds of good Vinegar in a Body of Glaſs, and fit thereto an Head and Receiver, ſet it in a Sand-furnace, and diſtill with a ſlow fire about two pounds of Liquor, which will have ſcarce any force, whence we call it phlegm of Vinegar: then change your Receiver, and increaſe your fire by little and little, and diſtill all over till there remain onely in the bottom of the Body a matter of the conſiſtence of hony; then ſlack your fire, that the Diſtillation taſte not of burning, and keep what is diſtilled; the uſe thereof is to diſſolve calcined Minerals, and to reduce them into the form of Salts. The hony-like conſiſtence which remains in the bottom may be put in a Retort, and forced over by gradual fire, it will yield an acid Spirit, and after a ſtinking Oyl, and a fixed Salt which remains behind in the Retort, which purified by many Solutions and Coagulations reſembles the fixed Salt of Tartar.

CHAP. XXII.

Of Tartar.

WE pretend not to treat of the Microcoſmick Tartar, which is a Viſcous matter formed in our Bodies, but of the Tartar of Wine, which is no other thing than an earthly ſubſtance ſeparated from the purer parts of the Wine, by the action of a fermenting Spirit, and coagulated to the hardneſs of a Stone, and is in it ſelf incorruptible, but may be reduced by the Fire into divers Matters. Now being to give a deſcription of the principal operations made on Tartar, I begin with that of purification; The firſt is thus done: Pour hot Water upon Tartar groſly powdered, the Water will take up its filth, which Water muſt be poured off and other put on, and this ſame operation continued till the hot water take up no more impurity; then dry the Tartar, and keep it for uſe: the ſecond purification is more perfect, and yields that which they call Cream or Chryſtals of Tartar, which is thus prepared: Put ten pounds of good Tartar of *Montpelier* groſly powdered in a great kettle, and pour thereon about three good pailes of common Water, and make a good fire under the kettle,

Kettle, that it may boyl for about a quarter of an hour, ſtir it ſometimes vvith a ſtaff, and vvhen you have ſcummed the diſſolved Tartar, and let it run yet hot through large pointed ſtrainers of Cloth, and let that vvhich paſſes cool and chryſtallize, and vvhen it is quite cold, take off the Cream vvhich ſvvims aloft and keep it; decant the Water, and vvaſh off the Chryſtals vvhich ſtay on the bottom and ſides of your Kettle, vvhich are very ſmall in this firſt Coagulation: But to make them more fair and large diſſolve them again in a ſmall quantity of clean vvater in a flat Baſin, and give them a vvalm or tvvo, and vvhen they are vvell diſſolved take them leiſurely from the fire, and cool them, vvhen they are cold, gather up the Cream and Chryſtal, and dry them, and you vvill have a very vvell purified Tartar, vvhich vvill be fairer and more tranſparent if the ſolution be made in a Pevvter Kettle.

The Principle Vertues of the Cream and Chryſtal of Tartar, are to attenuate the groſs Humours vvhich cauſe Obſtructions in the firſt Region of the Belly, and thoſe of the ſpleen, for vvhich reaſon it is ſerviceable in Melancholick Diſeaſes, and it is commonly uſed before Purgative Medicines, for it digeſts and prepares matters for a more eaſy Evacuation, its Doſe is from half a Dragm to tvvo Dragms in ſome Broth or other convenient Liquor.

Diſtillation of the Spirit and Oyl of Tartar.

PUT ſix pounds of groſly beaten Tartar in a Retort of gray or well-luted Earth, which you muſt place in a cloſe Reverberating-furnace, and fit thereto a large Baloon-Receiver, luting the joynts exactly, and then make your Diſtillation with a gradual fire: a phlegmatick water will firſt come over, and after that a Spirit and Oyl mingled confuſedly; and when nothing more will come over, and the Receiver begins to be clear, ceaſe the fire, and let the Veſſels cool, then unlute the Receiver, and ſeparate the Oyl and Spirit by a Tunnel furniſhed with brown Paper, the Spirit will paſs through it, and the Oyl will abide in the Paper, which you may put into a Viol, and keep apart; the Spirit may be rectified upon Coral, in the ſame manner as we have ſaid in the Chapter of Gum-Ammoniac, teaching the intire rectification of that Spirit. The Spirit of Tartar rectified is an excellent Remedy for Diſeaſes cauſed from Obſtructions: for it reſolves and attenuates by its ſubtilty groſs matters; for this cauſe it doth marvels in the Scurvy, and arthritick Diſeaſes, in the Palſy and ſmall Pox, provoking Sweat and Urine; its Doſe is from one ſcruple unto four, in broth or ſome other Liquor. The Oyl ſtrongly reſolves

ſolves Nodes and other hardneſſes, it likewiſe mortifies all ſharp humours, which cauſe Tetters, it heals the Scald Head, helps the Falling Evil, chafing the Noſe of thoſe who are troubled therewith.

Fixed Salt, and Oyl or Liquor of Tartar *by Deliquation.*

TAke the black maſs which remains in the Retort after the Diſtillation of the Oyl and Spirit of Tartar, and calcine it in a Reverberatory-furnace, in a flat open pot, till it become white, then let it cool, then pour upon it hot Water, in an earthen Veſſel, to the height of ſix fingers, and ſtir it from time to time for ſome hours: the Water will fill it ſelf with the ſaline ſubſtance, which muſt be decanted, and other hot Water poured on the Remainder, and this repeated ſo often, till all the ſalt be thence extracted; then filtre all your Solutions, and evaporate the Moiſture, till the Salt become dry and white as Snow, in the bottom of the Veſſel, which you muſt keep carefully in a Veſſel well-cloſed, for otherwiſe it will be reſolved into a Liquor by attracting to it the Moiſture of the Air; but if you would make thereof the Liquor by Deliquation, (which they call improperly the Oyl of Tartar) put ſome part of it upon a marble, or ſlate of

Glaſs, and place it in a Cellar or ſome other moiſt place, and it vvill in a fevv days be diſſolved into a Liquor; the Salt of Tartar is very diuretick, as all other fixed Salts, or Alkalies of Vegetables; vvherefore they are given vvith ſucceſs in Dropſies and Obſtructions of the Reins: its Doſe is from Ten to Thirty Grains in ſome convenient Liquor. The Liquor may be uſed inſtead of the Salt, for it is no other than the Salt diſſolved; but its Doſe muſt be encreaſed. They vvho ſeek only for the Salt of Tartar, need not diſtill it, they may calcine it alone in a reverberating Fire till it be vvhite, and after dravv from it its Salt as vve have taught.

Magiſtry of Tartar, or Tartar Vitriolate.

TAke eight Ounces of the Liquor of Salt of Tartar made by Deliquation, vvhich muſt be clear as Fountain-vvater, put it into a great Bolt's head vvith a long Neck, let Oyl of Vitriol fall thereon Drop by Drop, till there be no more Ebullition, vvhich is the Proportion obſervable, for you muſt do this till the Oyl of of Vitriol find there nothing that can act againſt its Acidity, then empty this Mixture into an Earthen Platter, which will be half congealed; if any thing remain in the Bolt's Head, waſh it out vvith diſtilled

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rain Water, and mix it vvith the reſt in the Platter, place this on a Sand-Furnace, and vapour avvay all the Humidity, there vvill remain a Salt vvhite as Snovv, vvhich you muſt keep in a Glaſs vvell ſtopped; this Salt is a very good Digeſter for diſpoſing Humours and preparing them for Purgation, it opens the Obſtructions in the Body, and eſpecially in the *Hypocondria*, and it helps alſo in Dropſies and Quartan Agues, the Doſe is from ſix to thirty ſix Grains in ſome Broth or opening Liquor.

Tinčture of Salt of Tartar.

PUT half a pound of ſalt of Tartar perfectly purified, into a Crucible with hot Coals, and keep it tvvo hours in a violent Fire, ſtirring it continually vvith an Iron ſpatula, that it may neither ſtick to the Crucible nor melt, and vvhen you perceive it to be of a blevv, approaching to a green colour, povvder it in an hot Mortar, and put it yet hot into a Pelican, or in ſome double digeſting Veſſel, and pour thereon good ſpirit of Wine by little and little, till it riſe four fingers above it; then cloſe the Veſſel vvell, and ſet it on hot Aſhes, until you ſee the ſpirit of Wine to boyl, and hold it in that ſtate

for twenty four hours, in which time the Spirit of Wine will draw to it ſelf a very red Tincture, and of a ſweet ſcent like that of the Vine in flower; then pour off this Tincture into ſome Bottle, and put on another Spirit of Wine upon the Salt, and digeſt it anew on a Sand-furnace for twenty four hours as before; and repeat the ſame operation, till the Spirit of Wine be coloured no more; filtre and mingle all your Tinctures, and draw over thereof two thirds or little more, and the tincture of Tartar will remain in the bottom of the Body, which you muſt keep in a Viol well-cloſed.

This Tincture is very excellent in all Diſeaſes which come from abundance of melancholick Humours, in the Scurvy and Dropſie, and it is of great force to purifie all the maſs of Blood, the Doſe is from ten to thirty drops, continuing the uſe thereof for ſome ſeaſon.

CHAP.

CHAP. XXIII.

Of Juniper-Berries.

THE principal Preparations which are made of Juniper-berries, are the Diſtillation of their burning Spirit, and drawing thence their Etherial Oyl, and their Extract, or Rob, which they commonly call the *German* Treacle. The burning Spirit is made in a Fermentation and Diſtillation like that of Water-creſſes, with addition of warm Water and yeaſt of Beer; but this rule of Juniper-berries will not ſerve for all Berries, for thoſe of Elder and Dwarf-elder are fermented without any addition, as well as the juyces of Grapes, Apples, Pears, *&c.* and need only to be broken, and put into ſome large Veſſel for eight or ten dayes, till the fermentation be raiſed; and then a burning Spirit may be diſtilled from them, which hath very great Virtues according to the materials whence it is drawn. The Diſtillation of the Ethereal Oyl is thus made; Break ſix pounds of Juniper-berries with a Peſtle, and pour thereon in a Copper Body, fifteen pounds of common Water, ſtirr all

all well, and fit to it its Mores-head, and diſtill with a gradual fire the ſpirituous Water and Oyl, which come over confuſedly, and continue till the Water come over without any taſte; afterwards you muſt ſeparate the Oyl from the ſpirituous Water by means of a wick of Cotton, as we have taught above in the Chapter of Wormwood, and keep the Water and Oyl apart in Viols well-ſtopped. Take that which remains after the Diſtillation out of the Body, and put it into ſome earthen Platter, or other Veſſel till it be cool, leſt it ſhould contract any bad quality from the Copper, paſs all the Liquor through a Linnen-cloth, and preſs the pouſe very hard, let all the Liquor ſtand and ſettle for a whole day, and then paſs that which is clear through a woollen ſtrainer, and evaporate the Liquor ſo ſtrained into the conſiſtence of an Extract.

The Spirit and combuſtible Oyl are powerful Medicines to provoke the Courſes, and open Obſtructions of the Liver and Spleen, to evacuate the Stone and Gravel of the Reins and Bladder, they are alſo good againſt the Plague, and to provoke Sweat and Urine. The Oyl outwardly applied fortifies the Nerves, and diſſolves hardneſſes. The Doſe of the Spirit is from half a dram to half a ſpoonful in warm broth, of the Oyl from three to fifteen drops, in its own diſtilled Water, or other Liquor; of the Extract from one dram to three in its own proper Water, or ſome other Vehicle.

CHAP.

CHAP. XXIV.

Of Seeds.

SEeds are prepared diverſly, according to the Subſtances they contain. For ſome are full of a mucilaginous juyce, in which lies their principal Virtue, as Quince-kernels, Linſeed, Fleawort, *&c.* Others contain ſtore of Oyl, which may be drawn by Expreſſion, and the ſame may be reduced into an Emulſion, ſuch are the Seeds of Peony, Poppy, the cold Seeds, Hemp, and infinite others. There are ſome from whom comes a burning Spirit, by means of Fermentation, as Muſtard-ſeed; and all thoſe which have a ſtinging and piercing taſte: many others have an Aromatick odour, and contain in them a Sulphur, or Ethereal Oyl, ſuch are Carraway, Fennel, Aniſeeds, *&c.* and they may be diſtilled as Wormwood, and Juniper-berries, and have afforded a Spiritual-water, and Oyl ſwimming thereon, which muſt be ſeparated by a wick of Cotton, as we have ſaid ſeveral times. But note that all Vegetable-ſeeds diſtilled by Retort, beſides the ordinary ſubſtances which are drawn from other parts of Vegetables, afford a quantity of volatile

volatile Salt adhering to the ſides of the Receiver, and repreſent an infinity of figures very pleaſant to behold: and it is worthy conſideration, that it is onely this part of the Plants that can afford a volatile Salt wholly congealed. Alſo amongſt the Seeds which have an Aromatick ſcent, there are many which produce not an Oyl only by Diſtillation, but by Expreſſion alſo, whereof we will give an inſtance in Annis, as follows.

Oyl of Anniſeed by Expreſſion.

PUT a pound of Aniſeed finely powdered upon a hair Sieve turned up-ſide down, and cover it with a Pewter-diſh, in ſuch manner that all the Anniſeed may be contained in the hollow of the Diſh, ſet the Sieve in a flat Baſon with two or three pints of water over the fire, and make the water boyl: the vapour thereof will pierce into, and warm the Powder of the Anniſeed; have a good Preſs with two boards, and a little ſack of ſtrong Canvas, all hot, and in readineſs, and when the plate that covers the Anniſeed-powder is ſo hot that your hand cannot endure the heat of it, put and tye your powder

powder up nimbly in the Sack, and readily into the Preſs, and you will force thence a green and clear Oyl, having the pleaſing taſte and ſcent of Anniſeed. The fore-alledged Examples will ſufficiently direct the curious to the knowledge of Vegetables, whole or in parts; we will here finiſh this Section, and come to that of Animals.

SECTION

SECTION III.

Of Animals.

ANimals in general, as well the perfect Terreſtrial, as Birds, Fiſhes and Inſects, are compoſed of a more volatile ſubſtance than Minerals and Vegetables; wherefore they yield neither ſo much Earth, nor volatile Salt after their Calcination. Now albeit this Family is no leſs numerous than that of Vegetables, yet alwayes ſtudying brevity, we will give Examples which ſhall be ſufficient for the Preparations of all ſorts of Animals, and their parts, and begin with the more Solid, as are bones, Horns, Hoofs; after we will come to the fleſhy parts, and laſtly to Blood and Urine. And whoſoever comprehends well theſe Preparations, may afterwards eaſily work every thing that depends on Animals. But it is neceſſary that the Artiſt chooſe for his work the parts of thoſe Animals which were of a middle age, and died by violence.

CHAP.

CHAP. I.

Of the Oyl and volatile Salt of a mans Skull.

TAke the skull of a man dead of a violent Death, cut it into ſuch little pieces as may enter into a glaſs-Retort, of which leave the third part empty; place the Retort in an earthen diſh in a Sand-furnace, and fit thereto a great Receiver, well luted, that the Spirits may not be loſt, and when the lute is dry give fire gradually, there comes over a little Phlegm at firſt, and after a Spirit which will fill the Receiver with a white miſt; at that time you muſt govern your fire diſcreetly, otherwiſe the Spirits preſſed too hard will force the joynts, or break the Receiver: after this Spirit comes over the Oyl, with ſtore of volatile Salt, which will cleave to the ſides of the Receiver; continue your Diſtillation, and augment your fire by little and little, till no more come over, which will come to paſs in ten or tvvelve hours; after, let your Veſſels cool, and unlute your Receiver, vvhich vvill contain a ſpirituous Liquor, a ſtinking Oyl, and volatile Salt. The Spirit and volatile Salt are of the ſame nature: vvherefore they muſt be ſeparated from the Oyl and afterwards rectified. That vvhich

remain

remains in the Retort is black as a cole, but if it be calcined in an open pot, it vvill become vvhite, and very ſpungeous and light, and being deprived of all its Salt, vvhich is very volatile, as is that of all other animal parts; and it may be called vvith good reaſon *caput mortuum*, or dead-head, which remains after the Diſtillation.

To ſeparate the Spirit and volatile Salt from the Oyl, you muſt put about a pound of warm Water into the Receiver, and ſhake it well that the volatile Salt may be diſſolved, and taken up in the Liquor, afterwards filtre this Liquor through Cap paper, and the Oyl will remain in the paper, which you may by piercing the paper cauſe to run into another Viol, and keep it. The uſe of it is to cleanſe Wounds and Ulcers, for it eats and conſumes putrified fleſh, and other ſuperfluities.

Take the Liquor which contains the Spirit and volatile Salt, and put it into a large Bolts-head with a long neck, and cover it with a Tunnel, which you muſt lute exactly all about, after pour in by the Tunnel a few drops of good Spirit of Salt, and preſently ſtop the hole of the Tunnel, that no Spirits may come out, continue to do this till the Ebullition which will be made at firſt by the conteſt of theſe two Spirits ceaſe; then filtre the Liquor, and diſtill by an Alembic of glaſs in a gentle heat of ſand, all the Water, vvhich vvill be inſipid, becauſe the Spirit of Salt is incorporated vvith the volatile Salt of the skull, and hath fixed it in a manner; and vvhen all the humidity is come over, puſh on the fire by little

tle and little, to cauſe all the Salt to ſublime, which remained in the bottom of the Body, one part whereof will riſe and cleave to the Alembick, and the other parcel to the upper part of the Body: Let the Veſſels cool, and gather the ſublimed Salt, which in taſte nearly reſembles that of Sal Armoniac. Its Doſe is from a Scruple to a Dram; but it may be made alſo more ſubtle and piercing, by ſeparating the ſulphureous Animal Salt from the acid ſpirits of Salt, with which it was mingled to correct in part its bad ſcent. Take then four ounces of this Salt, and mix it with two ounces of fixt Salt of Tartar, or ſuch other Salt Alkali as you pleaſe, and put them in a little Body well fitted with its Head and Receiver, and lute their joints exactly, then give fire very gently, and you ſhall ſee that the ſulphureous Salt will ſeparate it ſelf, and riſe into the Head with the leaſt heat, white as Snow, and will leave the acid ſpirit (wherewith it was incorporated) in the bottom of the Body detained by the Salt Alkali: ſo you ſhall have a Salt of the moſt extream ſubtilty, which you muſt keep in a Viol well ſtopped, for otherwiſe it vaniſhes by little and little.

This Salt and all others drawn from Animals, have very great Vertues, and may paſs for the Columns of *Pharmacy*; for they penetrate to the places fartheſt removed from the firſt Digeſtion, and diſſolve all Viſcous and Tartarous Matters, open all Obſtructions, heal all Fevers, and principally the Quartans, preſerve from the Plague, and ſtrongly reſiſt all

Putrifaction. The Doſe is from ſix to fifteen Grains, in ſome cold Liquor or Broth; otherwiſe in the leaſt heat they vaniſh in the Air.

The Salt of mens Skuls is peculiarly proper for Falling and Mother-Fits.

This Operation may ſerve for an Example of all Bones, Hornes, Hoofs, Nails, Claws and Haires, and generally for all ſolid and dry parts of Animals.

CHAP. II.

Of the Diſtillation of Vipers Fleſh.

GET a good quantity of Vipers a little after they come from their Holes, cut off their Heads and Tails, ſtrip them and take out their Bowels: which caſt away, reſerving their Fat, which you muſt melt and keep apart; the Heart and Liver which muſt be mingled with their Fleſh; cut your Vipers thus, prepared into pieces, and their Hearts and Livers likewiſe, and ſet them in one or more Glaſs Bodies, which you muſt fit with Heads and Receivers, and ſetting them in a Furnace of Sand, draw off with a very gentle heat all the Moiſture that will riſe; but ceaſe the Fire,

and

and let your Veſſels cool as ſoon as it begins to taſte of the leaſt burning, and keep well the diſtilled Water in Viols well ſtopped; after cut into little pieces the dried Fleſh found in the Still-body, and put them into a Glaſs Retort, leaving one third part thereof empty, which ſet in a Sand-furnace, and obſerve all the Circumſtances which we have deſcribed for the Diſtillation and Rectification of the Spirit and Oyl of Man's Skul, and you ſhall have a Salt endued with innumerable Virtues, which heals not only all continual and intermitting Fevers; but the Palſie, Falling Evil, Leproſie, Diſeaſes of the Mother, reſiſts Putrifaction, expels Poyſon, heales and preſerves from the Plague, and hath an infinite of other choiſe Vertues. The Doſe is from ſix to fifteen Grains, in its own diſtilled Water, or ſome other Liquor.

They that would make the Powder of Vipers, muſt dry the Heart Liver and Fleſh in a Glaſs Body in *B. M.* till it may be reduced into Powder, and by this means nothing at all of their ſubſtance periſhes; for their Water is drawn over in the Diſtillation, which is impregnate with their moſt ſubtle and volatile ſpirits, and ſerve for a Vehicle wherein to take their Powder.

This Operation may ſtand for a Rule for all the fleſhy parts of Animals, for the after Burthen, and for ſome whole Animals, as Wood-Lice, from which may be drawn Remedies proper for healing Cancers.

CHAP. III.

Of the Diſtillation of Man's Blood.

TAke a quantity of Blood drawn from ſound and well-Complexioned young Men, diſtil from it all the Humidity which will riſe in an Alembick in *B. M.* and keep the Water; after put into a Retort the dried Maſs which remains in the Still-body, and proceed therewith in the ſame manner as we have taught for Skuls in the firſt Chapter. You ſhall have a ſtinking Oyl, and by Rectification and Reſublimation a very excellent ſalt for correcting the whole Maſs of Blood, for healing Fevers, the Falling Evil, and Scurvie, and for opening all Obſtructions. Its Doſe is from ſix unto fifteen Grains, in its proper Water, or in ſome other convenient Liquor.

CHAP. IV.

Diſtillation of Urine.

TAke the freſh Urine of Children from eight till twelve years of age, or of young Men in good health, and fill many Bodies therewith to three fourth parts, to which fit Heads, and draw off in a gentle heat of *B. M.* lla their Humidity which will be inſipid, there will remain an Honey-like ſubſtance in the bottom of the Bodies, which muſt be put into one Body fitted with Head and Receiver well luted, and diſtill with a ſand-Fire what will come over, governing the fire well, that the matter may not riſe and run over; firſt there goes over a ſpirituous Water, and after the Volatile ſalt begins to riſe, and ſtick to the Head, with a little ſtinking Oyl which trickles over into the Recipient with the Volatile ſalt, which it diſſolveth: the Veſſels being cooled and unluted, you will find in the bottom of the Body a black Matter, which may be calcined in a Pot with a violent fire, and reduced to aſhes, and then a very ſmall quantity of Salt will be drawn therefrom; which Coagulated or Chryſtallized hath thee taſt and form of Common Salt. The

Oyl and Volatile Salt muſt be ſeparated from the ſtinking Oyl, by putting into the Receiver ſo much warm Water as is needful to diſſolve the volatile ſalt which was congealed; then filtre the Solution through Paper, in which the Oyl remains, and muſt be made to deſcend into a Viol apart by piercing the Paper; put the Liquor filtred into a great Bolt's Head with a long Neck, and fit to it a large head round and flat, repreſented in the Table of Veſſels by the Figure marked with *A* and *B*, fit to a Receiver and lute the joints exactly; place it in a Sand-furnace, and give a very gentle fire, you ſhall ſee that the Volatile Salt will be ſeparated by the leaſt heat, and will ſublime on high into the head of the Stil in the form of Snow, leaving a ſtinking and inſipid Oyl in the bottom of the Bolt's head not able to riſe, becauſe of the height of the Veſſel and over weakneſs of the heat; let the Veſſels cool, and gather and keep the volatile ſalt in Viols well ſtopped; for otherwiſe it would go away by little and little by reaſon of its ſubtilty.

This ſubtle and ſulphureous ſalt hath great Vertues inwardly and outwardly; it opens all Obſtructions and is admirable in all melancholick Diſeaſes, to cut and diſſolve Gravel and Sand, and drive them out by Urine from the Reins and the Bladder. Its Doſe is from ſix to fifteen or twenty Grains, in ſome convenient Liquor.

Being diſſolved in *Aqua Vitæ* in which there is left a little Phlegm (for rectified ſpirit

rit of Wine will not diſſolve it) it may be employed outwardly for the pains of any part of the Body, and eſpecially thoſe of the joints, and to diſſolve Nodes.

Another Diſtillation of Urine, and Sublimation of its Volatile Salt.

PUt a quantity of well conditioned Urine into many Pitchers, or a Barrel well ſtopped, and let it ſtand fourty days, in which time it will be fermented, and prepared to give forth its Spirits: Put it into many Glaſs Bodies, and diſtil off about half the Moiſture, and you ſhall have a clear and ſpirituous Water; caſt away what remains in the Bodies after every diſtillation as of little value, and rectifie the Water yet two or three times by diſtilling off the half, and caſting away what remains, and continue this work till you have collected all the vertue, or all the ſpirits of Urin into a ſmall quantity; which you ſhall put into a Bolt's head with a long neck, to which you muſt fit a large head, and cauſe the ſpirituous Volatile Salt to riſe with a very gentle heat of Sand, which will eaſily ſeparate it ſelf from the ſuperfluous phlegmatick Water, leaving it behind in the bottom of the Bolt's head. This Preparation is more Tedious and Laborious than the

former; but it produces a more pure ſubtle and penetrating, and conſequently a more efficacious Salt. Theſe preparations may ſuffice as I conceive, for examining and preparing all matters contained in the Animal Family: wherefore concluding this Section we will content our ſelves only to add ſome Preparations of Matters that are after a ſort diſtinct from Animals, Vegetables and Minerals.

CHAP. V.

Of Dew.

THE *Chymiſts* having need of great ſtore of Liquor to extract the virtue and beſt ſubſtance of many Vegetables; they have not yet found a more ſimple, naked, and conſequently a properer one to take up their ſubſtance than *May*-Dew, which is made more pure by diſtilling it as follows. Take a quantity of *May*-Dew (which abounds with a ſubtle ſpirit,) and diſtill off about half in *B. M.* or moderate heat of Sand; and rectifie it once more, drawing off a half part only, which you muſt keep in Vials well ſtopped. This Water ſerves not only as a *Menſtruum* for Extractions, but may alſo be employed as a vehicle for

for many Medicines which have need to be diſſolved in ſome Liquor. The ſame work ſerves for Rain-water, but it muſt be taken in the Month of *March*, about the *Æquinox*, at which time it is better repleniſhed with the Univerſal Spirit, than at any other ſeaſon.

CHAP. VI.

Of Manna.

Manna is an Aereal Liquor, fallen in the form of Dew, in the time of the *Æquinoxes*, upon Trees and Herbs, whereon it is by little and little condenſed into grains; it is produced in many of the Eaſtern parts, but that which is moſt uſed in *Europe* comes from *Calabria*, in the Kingdom of *Naples*; it ought to be new, white, and of a pleaſant ſweetneſs, that which is become yellow and ſtale is to be rejected, becauſe it hath loſt part of its Spirits. A Spirit is drawn from it by Diſtillation, as follows. Put two or three pounds of good *Manna* into a large Retort, whereof the third part onely muſt be full, ſet it in a Sand-furnace, put to it an unluted Receiver, and by a very gentle heat diſtill over a phlegmatick Water; taſte it from time to time, and when the drops begin to be pungent, change or empty your Receiver, ſet it to again, and lute the joynts exactly, and augment

augment the fire by little and little, and continue till there come no more over: cool and unlute the Veſſels, and put the Spirit and rectifie it in a ſmall Body and Head on a Sand-furnace; and you ſhall have a clear Spirit, and of a pungent and acid taſte, which is an excellent Sudorifick, and may be employed in Malignant Fevers themſelves, and in all others likewiſe; its Doſe is from a half to a whole dram, in ſome Liquor. Some have imagined that calcined Gold might by means of this Spirit be reduced into a Liquor, to which they attribute admirable Virtues; but I conclude that if any good ſucceſs befall them who uſe this pretended potable Gold, it muſt be attributed to the virtue of this Spirit.

CHAP. VII.

Of Honey.

HOney is too well known for us to buſie our ſelves in its Deſcription; we will content our ſelves to teach how it may be reduced into ſeveral ſubſtances. Take three pounds of Honey taken from Virgin-Bees, for that is beſt, and put it in a very large Body and Head, ſet it in a Sand-furnace, fit and lute well to it a Receiver, and give a very gentle fire to raiſe its phlegmatick Water,

Water, which comes over firſt, and muſt be kept apart; continue your fire in this firſt degree, for the Honey will elſe be Rarified by too great heat, and riſe into the Helme, which muſt be avoided, wherefore this Operation requires a very patient Artiſt; after the Phlegm riſes a ſharpiſh Spirit of a yellow colour, and in the concluſion a red Spirit with a little Oyl: the Diſtillation muſt be continued till nothing come over, then let your Veſſels cool, and ſeparate your Spirit from the Oyl, and rectifie it by an Alembick on a Sand-furnace. That which remains in the Body may alſo be calcined, and a very ſmall quantity of Salt thence extracted. The phlegmatick Water may be ſharpened by its own acid Spirit, for the Diſeaſes of the Eyes, and to cleanſe them, and to make hair grow; the Spirit is good againſt Obſtructions in the Body, taken from twenty to thirty drops, in ſome aperitive Liquor, or in its own Water; it ſerves alſo to diſſolve *Mars*, and other Metals, and reduces them into the form of Salt or Vitriol; the Oyl is good to mundifie gnawing Ulcers.

CHAP.

CHAP. VIII.

Of the Diſtillation of Wax.

CUT two pounds of Wax into little pieces, and put them into a good large Retort, ſo that it may be onely half full, ſet it in a Sand-furnace, fit and lute a Receiver to it very exactly: begin with a ſmall fire, and augment it by little and little; there comes over firſt a little phlegm, and after a pungent Spirit, after that a clear, and then a thick Oyl like Butter, and at laſt a volatile Salt cleaving to the ſides of the Receiver, but in a very ſmall quantity: raiſe and continue your fire till nothing come over, then cool and unlute your veſſels: put a pound of moderately hot Water in your Receiver, to diſſolve the volatile Salt, and joyn it with its Phlegm and Spirit, after ſeparate your Oyl by a Tunnel; but for that it is very thick, you muſt incorporate it with ſifted aſhes, and rectifie it in a Retort; keep that which comes firſt over for inward uſe, the latter, which will be thick like Butter, may ſerve outwardly: the Liquor, which contains the Spirit and volatile Salt, may be rectified and ſublimed into Salt, in the ſame manner as the volatile Oyl of Amber. The ſub-

tle

tle Oyl and volatile Salt are very excellent Remedies for the retention of Urine; the Doſe of the Oyl is from four to ten drops, of the volatile Salt from five to ten grains, in ſome proper Water. The buttery Oyl is very reſolving; applied outwardly it reſtores Motion to Paralytick Members, and is alſo good againſt the Sciatica, and Chilblains.

Here we will finiſh this Treatiſe, being perſwaded that we have given ſufficient Examples for all Chymical Operations; and as we have concealed nothing, but taught all things in the moſt clear manner that poſſibly we could, I hope the curious Reader will therein find his ſatisfaction in ſome ſort, and may (purſuing our rules) undertake, and happily perform all ſorts of Preparations.

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